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AMATEUR CINE WORLD

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YOUR
PROJECTOR**



**Easy-to-Make
BOX
FOR
SPOOLS**

A FOUNTAIN



PUBLICATION



C5

eumig

zoom-reflex

8 mm. Cine Camera

EUMIG 503 14-element f1.8 lens, 10 to 40 mm. Flicker-free reflex viewing with constant brightness. Fully automatic exposure control adjustable ± 3 stops. Electric drive with provision for remote release. Coming shortly—the EUMIG recorder for simultaneous sound and vision.

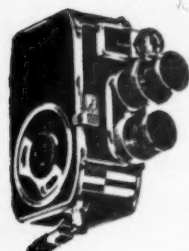
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PISTOL GRIP £3. 19. 7 HOLDALL £5. 11. 11

Ask your dealer for a demonstration!



Bolex is better



BOLEX B8SL

This latest addition to the range is especially suited to the beginner and the not-so-expert who still want to make good films. The keynote is simplicity, but all the features for good film making are included.

The B8SL has a twin-lens turret. Behind-the-lens light-meter-controlled exposure setting is built-in, there is a single filming speed of 18 f.p.s., and the finder shows the fields of both lenses. Single frame control is fitted, and a safety lock. Everything for simple yet efficient film making is included. With Yvar f/1.9 fixed focus standard lens, and Yvar 36mm. f/2.8 Telephoto focusing lens, the price is £69/14/6 or deposit £12/16/6 and 12 monthly instalments of £4/7/3.

Wallace Heaton recommends Bolex equipment for reliability, Swiss - built mechanical construction and high optical quality.

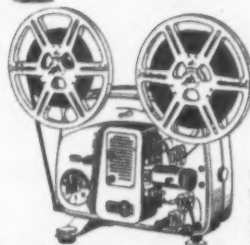


BOLEX D8LA and B8LA

These famous models are now greatly improved; the "behind-the-lens" exposure meter is now more sensitive and more accurate while still measuring all the light that passes through the lens. A built-in calculator dial shows the setting required for wide-angle, telephoto and standard lenses. Gear-operated backwind is fitted which gives audible indication of the number of frames wound back, and which can be used in conjunction with the variable shutter to give fades in and out. The new optical finder shows fields for focal lengths of 5.5, 12.5, 25 and 36mm.

D8LA, with three lens turret and f/1.8 Yvar focusing lens, £95/9/8 or deposit £19/9/8 and 12 monthly instalments of £4/18/1. With f/1.5 Switar focusing lens, £112/11/11 or deposit £22/11/11 and 12 monthly instalments of £8/3/6.

B8LA, with twin lens turret and f/1.9 Yvar fixed focus lens, £76/7/10 or deposit £15/7/10 and 12 monthly instalments of £5/10/10. With f/1.8 Yvar focusing lens, £87/10/6 or deposit £17/10/6 and 12 monthly instalments of £6/7/2.



BOLEX 18-5 8mm. projector

The 18-5 shows your films at the standard speed of 18 f.p.s. or at 5 f.p.s., to get ultra-slow motion; to analyse action, to see every detail, to make short sequences of still subjects stay on the screen, and to help in editing.

Speed change is instantaneous; the shutter auto-heats and eliminates flicker.

matically changes from 3 blades at 18 f.p.s. to 9 blades at 5 f.p.s. to safeguard against lamp heat and eliminate flicker.

8v. 50w. projection lamp and f/1.3 lens give a brilliant, sharp picture; focal lengths of 15, 20, or 25mm. are available. A single switch controls projection speeds and reverse running at 18 f.p.s. with lamp on or off. Threading is very simple; the lens holder pivots clear of the film gate. Lubrication is unnecessary. In smart two-tone carrying case, weight 15 lb. 10 1/2 in. x 8 1/2 in. x 6 1/2 in. overall when closed.

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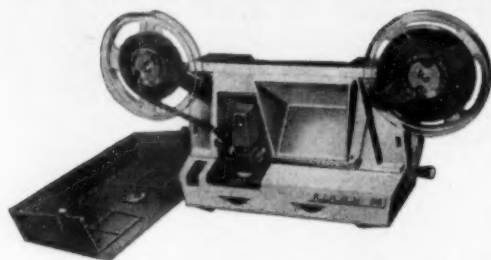
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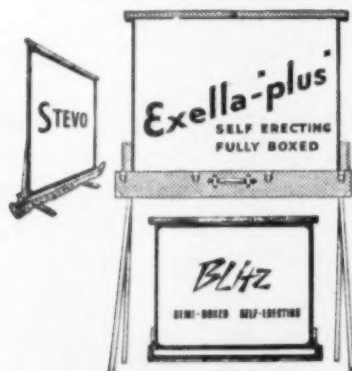
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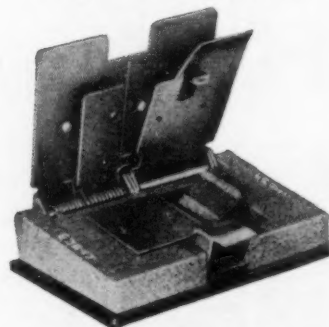
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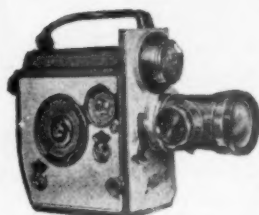
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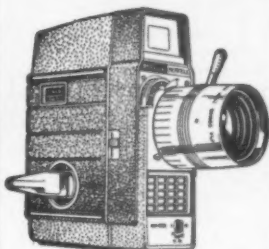
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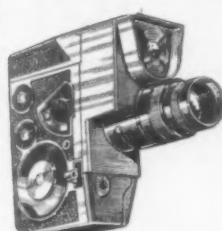
FOCOVARIO '8'

Fitted with 10 to 40mm. f/2.8 Zoom Reflex lens of very high quality. Coupled exposure meter, needle is visible in viewfinder. Variable speeds and back wind. £139.10.0.



8mm. AUTOSET III

Fitted with 9 to 27mm. f/1.8 Zoom lens, coupled to viewfinder. Fully automatic exposure control. Complete with Pistol Grip and Case. £74.19.4.



8mm. ARCO ZOOM

With 11.5 to 33mm. f/1.8 focusing Zoom lens, reflex viewing, variable shutter, 6 filming speeds. Single frames £86.10.11.



**8mm. B & H
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V**

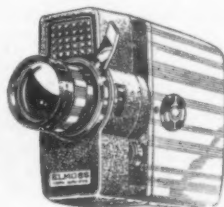
With 9 to 27mm. f/1.8 Zoom lens in focusing mount. Fully automatic exposure control. 2 speeds, single frames, pistol grip & case £105.11.1.

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Built-in meter behind lens ensures perfect exposures. With 9 to 40mm. high definition f/1.9 reflex Zoom in focusing mount, £132.4.8.

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- ★ **FADE-INS**. The Prinz Cavalier lets you fade in or out on a scene merely by touching an aperture wheel.
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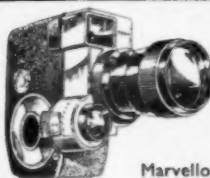
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(Complete with pistol grip and case)



Now Bell & Howell present the ZOOM model of the famous AutoSet. This new ZOOM AutoSet is really tremendous value—the price includes pistol grip and English hide compartment case. All the precision features of the world-famous AutoSet. F/1.8 haze corrected-Zoom lens 10 to 29mm. optical Zoom viewfinder coupled to zoom lens, 3 way starting button, controlled motor—no slow down. Film speed 5 to 40 ASA. Built-in filter. Also manual exposure control.

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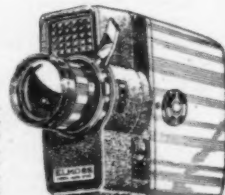
£7 DOWN and 8 monthly payments of £9/1/6 or £15 deposit and 12 monthly payments of £5/6/9 or 18 of £3/14/6 or 24 of £2/17/3.

ELMO 85 ZOOM AUTO-EYE

£90.19.6

Particularly easy through-the-lens parallax-free focusing (single lens reflex system). Speeds of 12, 16, 24, 48 f.p.s. and single frame exposure—all exposures automatically correct with built-in auto-eye (manual lens setting if desired). High tension spring winding gives run of at least 11 feet. Terrific Zoom lens makes your subject Z-O-O-M fantastically towards you. A really splendid movie camera.

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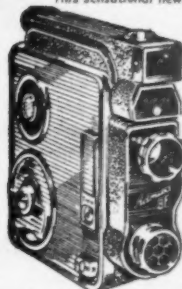
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This sensational new Magic Eye 8mm. camera



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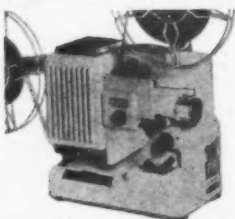
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Fill your screen using the latest f/1.3 Eupro Zoom 15-25mm.

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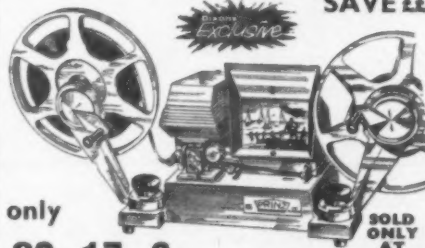
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500 W. PREFOCUS LAMP is included in price. Very cool running due to powerful blower and extra large finned lamphouse with aluminium thermal screen. COATED f/1.5 HIGH DEFINITION projection lens of 20mm. focal length gives crisp pictures 50% larger than conventional 25mm. GATE STOPS "SPLICE JUMP" by ingenious side tension springs. All-nylon gearing for quiet running. FEATHER-TOUCH MICRO-SWITCHES control interlocked lamp, motor and blower operation. Fully variable range of speeds. 400-FEET SPOOL ARMS give full half-hour's show. Five Year Guarantee. Case 37/6.

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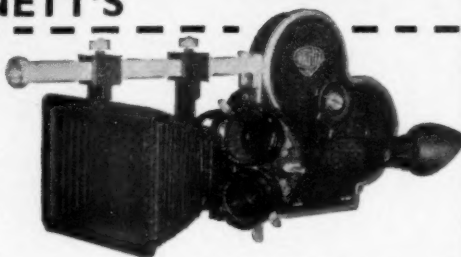
The increasing popularity of 8mm. cine cameras has resulted in the declining sale of 16mm. equipment in recent years. However professionals and critical amateurs know that for serious filming, 16mm. work has proved to be far superior. Listed below are some of the famous names in 16mm. cine photography—but these are just a few from the vast range of both new and secondhand cameras available at Bennett's.

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See the finest at BENNETT'S

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The main advantages of the Arriflex system are as follows:

- * REGISTER PIN which holds the film rock-steady during each exposure.
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Arriflex camera body ...	£549	10	0
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Price £298 . 2 . 6

The internationally famous WEBB M with continuous reflex viewfinder

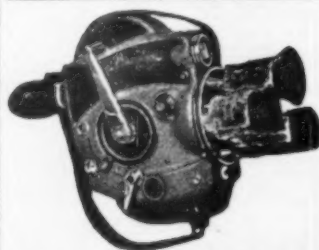
Advanced system eliminates parallax, as you see exactly what you get. Enables lenses of various focal lengths to be used without their special viewfinders. Takes 50ft. and 100ft. spools of single or double perforated film. 3 lens turret takes C type lens mount. Speeds adjustable from 8 to 80 f.p.s. with indications at 8, 16, 24, 32, 64, 80. Variable shutter facilitates lap dissolves, fades, filming in bright light, etc. Powered by robust motor.

Price (less lenses) £174 . 7 . 6

The Sensational SIEMENS 2000

The only 16mm. sound projector in its price range with double-headed magnetic operation. This up to the minute equipment, in addition to the usual Siemens characteristics of brilliant and even screen illumination high etched definition and rock steady picture.

Price £737



Featuring the ultra luminous reflex viewfinder which ensures maximum brilliance—even at the small stops.

The Wonderful BEAULIEU R16

The performance of this superb camera has been proved time and again under the most exacting conditions. Takes 100ft. spools of single or double perforated film, loading is extremely simple. 3 Turret lens assembly has 25mm. (standard), 10mm. (wide angle) and 75mm. (telephoto) lenses. Speeds are 8, 16, 24, 32, 48, 64 f.p.s., with full range of intermediate speeds. Special single exposure system permits unrestricted exposure times when lighting conditions are difficult.

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H.16 reflex with variable shutter, 10mm. f/1.6; 25mm. f/1.4; 75mm. f/1.9. All Switar lenses. Superb condition ... £282 17 6
As above, but fitted with 16mm f/1.8 Switar; 25mm. f/1.4 Switar; 75mm. f/2.8 Yvar ... £229 17 6
H.16 Reflex as above but without variable shutter. ... £212 10 0

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Vol. 2, No. 37
(Old series Vol. 26, No. 37)
5 October 1961

Edited by
TONY ROSE

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WAITING TO BE CLAIMED

HUDDLING IN EVERY processing laboratory at this time of year is a pathetic group of orphaned films — homeless because they were sent in without their owners' names and addresses, so that nobody knows to whom they belong. That amateur films should be posted off to a lab. anonymously is not at all surprising, for the job is often done in a hurry at holiday time — a quick dash into the post office from a car guiltily parked in a busy street. What does surprise is that, as the weeks pass and no processed spool returns, so many owners do nothing to find out why. It seems that just as some of us hurl furious letters at the lab. if last Saturday's shooting is not in our hands, ready to project, by next Wednesday night, some of us gloomily conclude that a film which fails to arrive when expected is necessarily lost beyond recall.

If you are among these pessimists, the probability is that you are wrong. A film (which has its maker's name on the box even if its owner's is missing) is a difficult thing to lose. There is in fact an excellent chance that yours is among the orphans in the lab., waiting to be claimed.

Write and ask, but remember that there may be a hundred orphans answering to the description "Shots of family on beach" in the lab. "Family on beach, with shots on pier," may thin them down to a dozen. "Opens with beach scenes, then pier with CUs of anglers, ending with brass band" will almost certainly re-unite you and the lost reel by the time the next issue of *ACW* appears — but lest even this combination has a twin, let the lab. know the approximate date of posting and the name of the place from which it was despatched. The chances of two films having identical postmarks and identical contents are slight indeed.

CAUTIONARY TAIL

A DOUBLE-RUN spool was on its first run. The footage counter got to exactly 25ft., and, because rain had just started to fall, the camera was forthwith put back in its case.

That afternoon good filming weather returned, so the camera was taken to a shady spot and opened to reverse the spools — a job which took longer than usual because it entailed winding up the 4ft. of trailer that had been left on the feed spool, idiotically, when the counter said "25ft." Result: severe fogging extending at least 3ft. (6ft. lost after slitting) into the usable part of the film. Moral: empty the top spool immediately after the last shot.



"I'm darned sure Robin Hood didn't
have to put up with warped arrows!"

FOR FILMING FISHES too large for the tanks discussed in the previous instalment (though it has also proved useful for taking underwater shots of a water vole swimming), I have built an above-ground "pond" in my garden (Fig. 6). The basic foundations are provided by bricks, faced on the inside with concrete into which have been embedded rounded stones taken from a river bed and split through the centre. There are three different depths. Against the glass front the water is about 20in. deep. Then comes an intermediate depth, set 12in. back from the front, with a low wall for retaining compost and soil to support plant growth. The back semi-circle holds only about 2in. depth of water and is fringed by natural grasses and wild flowers; this has provided a background for filming such events as water voles feeding or birds drinking and bathing.

The glass front of the pond is $\frac{3}{4}$ in. plate and is supported across the top by 1 $\frac{1}{2}$ in. steel angle. The glass is sealed into the steel and the concrete base and side faces by a substance, sold at most pet shops, called Ganderback. The entire structure is surrounded by three 2ft. concrete slabs, these being held vertical by 18in. high brick piers. The space between the slabs and the outer wall of the pond itself is filled with rubble and then topped with 9in. of soil to support the grasses and plants.

As a protection against frost, and to minimise the growth of algae on the glass, I normally keep the outside of the glass covered with a wooden board which is upholstered on the inside with glass-fibre insulating material (Cosywrap) and waterproof canvas. In the winter, as a further safeguard against the cold, I suspend two 100W. fish-tank immersion heaters just below the surface and 4in. from the glass. This keeps the ice thin locally and makes it easier to break away from the glass each morning. For electrical safety the heaters are specially wound for 100V.: they are fed through a cable which runs under the lawn to a transformer in the garage.

The pond is orientated to receive mid-day sun in a direct

How to film creatures in natural ponds and portable tanks was explained in the first instalment (ACW of September 28). Now follow details of an artificial pond for the larger fish and, at the other extreme, advice on the special techniques needed for filming creatures almost too small to be seen with the naked eye.

Filming Underwater Life

PART 2

BY A. FAULKNER TAYLOR, F.I.P.B., F.R.P.S.

line with the glass front—that is, at 90 degrees to the camera axis. I normally scrape off the algae from the inside of the glass on the day previous to a proposed filming session in order to allow the fine mud disturbed from the bottom to subside. The main problem which has to be overcome is the elimination of reflections of both myself and the garden and the glass—this can be done only by complete "tenting" of the area in front of the pond. I erect a temporary awning of dark material, supported by a wooden framework 36in. high and 7ft. back from the glass; this contains both me and the camera.

Optimistically anticipating a good summer, I treat the water in the spring with Clarox—a complete bottle being

Fig. 6. For filming fishes too large for portable tanks, the author built this above-the-ground pond in his garden. The bottom slopes upwards, giving a depth of 20in. in the front and only 2in. at the rear.

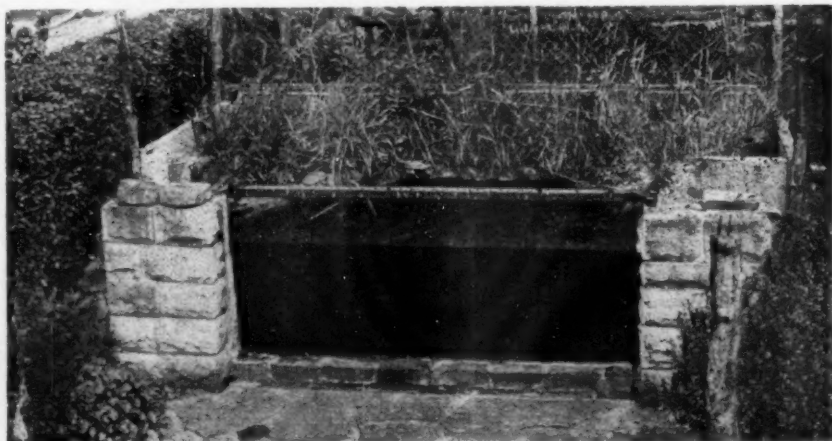




Fig. 5. A typical creature of the ponds—the nymph of our largest dragonfly, *Aeshna juncea*.

necessary for my 150 gallons or so—to counteract the growth of suspended algae, which can easily make the water look like pea soup. During the only too rare periods of good weather I cover most of the water with an awning of timber; this not only retards the growth of algae but also prevents the temperature from reaching a level which would kill some of the inhabitants.

When the subject is only 2 or 3in. inside the tank and the camera 20in. or so away from the glass, normal rule-and-scale focusing is quite accurate enough for a 2 or 3in. lens on 16mm., even if the aperture needed is as large as $f/2.8$. For smaller subjects, such as close-ups of parts only of dragonfly nymphs or newt larvae, it is necessary to work between 12 and 15in. with a 2in. lens (on 16mm.). Direct focusing on to a screen is then essential. Accurate aiming is vital and if a normal viewfinder is used modifications may have to be made for parallax adjustment. Of course, these problems are ironed out with cameras employing a continuous reflex system.

Calculating Exposure

Underwater creatures are among the few subjects for which the incident-light method of exposure calculation is utterly useless. A direct reflected-light reading with a photoelectric meter, held close to the front glass of the tank, will give a fairly reliable indication, although with a dark background a setting half a stop smaller than the meter reading is usually found to be correct. I have found the S.E.I. photometer to be a more reliable guide. I select a portion of the picture area which I wish to render as a mid-way density in the finished film, setting the film speed ring of the photometer opposite $f/3.2$ of the aperture ring.

Creatures as small as hydra, daphnia and cyclops—the last two are a mere 2mm. or so in length—can be filmed

in action with normal lenses (2 or 3in.) and extension tubes. A small container with a fair degree of optical precision is necessary for the best results. For the hydra, I have used a microscope water-cooling cell, attaching the animal to a small branch of an aquatic plant, this in turn being embedded in a blob of Plasticine resting on the bottom of the cell. In order to illustrate the feeding habits of the hydra I then introduce a number of daphnia and cyclops into the cell, having temporarily hived off one end with a piece of thin celluloid. When tiny bits of foreign matter, which are difficult to separate from the animals, have subsided to the bottom, I remove the strip of celluloid. Then all that is needed is patience and luck—waiting for one of the small crustaceans to come within range of the tentacles of the hydra. Naturally it is inevitable that a lot of film will be wasted because one can never anticipate with any degree of accuracy when a catch is due to take place.

To illuminate the microscope cell, I use a single photoflood, mounting it about 6in. above the cell and slightly behind. It must be switched on for short intervals only, just before one expects to start shooting, for otherwise the

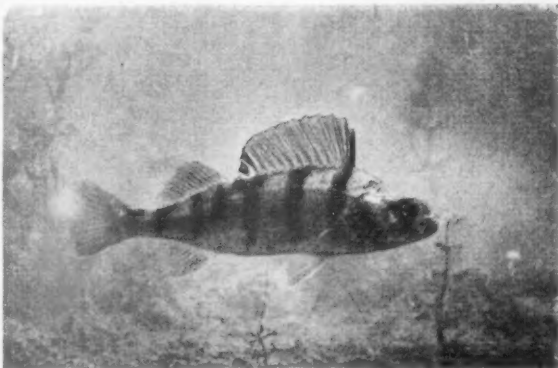


Fig. 7. Filmed through the glass side of the garden pond (shown in Fig. 6 opposite)—an 8in.-long perch.

temperature of the water in the cell will shoot up rapidly and the contents will die. An electric fan will help to keep the cell cool. If the normal room lighting is subdued, the crustaceans will remain on the bottom and spring into activity only when the photoflood is switched on.

This form of lighting normally renders the subject as light-coloured against a black background, though a coloured background can be introduced if desired. An alternative method of lighting for these small objects is to throw them in silhouette against a white background, the photoflood pointing towards a sheet of white paper. With such lighting, there is no risk of a dangerous rise in water temperature, providing no direct rays from the bulb strike the cell.

For daphnia and cyclops only, I use a colorimeter cell,

Continued on page 543



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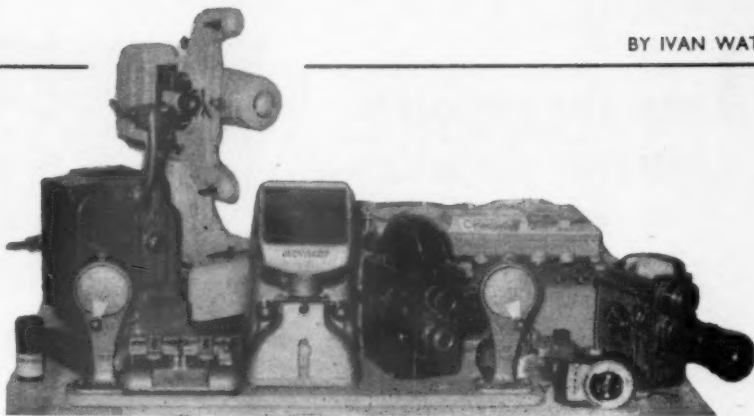
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Movie Miscellany

BY IVAN WATSON

The 8mm. equipment selected by contributor Watson after long (and costly) experiment. It could be traded in tomorrow for some very serviceable 16mm. apparatus, he says, but it won't be—not when there's such a bright future for 8mm.



"I've Spent a Small Fortune on 8mm — But I Don't Regret It."

AS ONE OF the slightly battle-scarred protagonists in the gauge war, I have been somewhat disconcerted by the arrival of a small but enthusiastic faction bravely marching on to the field under a banner inscribed "Half-Sixteen." They certainly have an intriguing idea and I wish them well, even though I believe they have little or no chance of establishing a new gauge, whatever its potential merits.

When vast sums of money have been sunk into an industry — which, by and large, is doing very nicely, thank you — and you have tooled up on a massive scale with the avowed intention of making every other citizen the owner of an 8mm. cine camera, the prospect of some hard and expensive pioneering to create a new market will not, I imagine, be viewed with much enthusiasm in the boardrooms of the various manufacturers. Understandably, the businessman works on the rugged but financially rewarding principle of "when people want fish and chips, sell 'em fish and chips."

Fortunately, most of us take this fascinating hobby seriously enough to become strongly partisan. When we argue the merits of our chosen gauge, we aren't always entirely reasonable or realistic. It would seem that the Half-Sixteen enthusiasts are no exceptions for, in *ACW* (Aug. 31st) we have Mr. B. S. Jackson offering us a table of the relative cost per minute per square millimetre of the various substandard gauges, and establishing that on this basis "16mm. is better value for money than 9.5mm., and much better than 8mm."

Well, "figures is figures" and you can't disprove what he says — unless your sense of values is such that you wilt at the thought of judging what you're getting for your money on a basis of sheer bulk. If I pay 7s. 6d. for a cinema ticket and am entertained (?) in *Super Splendourscope* with three hours of *Getting Gertie's Garter*, I am apparently getting better value — in one sense at least — than from 7s. 6d.

spent on a humble 35mm. showing of the latest Bergman film.

But, of course, Mr. Jackson doesn't really mean what I've read into his figures. He is merely discussing the cost of raw material, and all I am doing is trying to draw attention to the folly — of which most of us are guilty at times — of regarding the cost of film stock as of prime and over-riding importance to amateur film-makers. And, if that statement leads you to suppose I've had a sudden change of heart, or should cause premature rejoicing on the part of certain 16mm. enthusiasts who have solemnly assured me that "16mm. can be a lot cheaper than you think," I had better do some explaining.

For most amateurs, the running time in relation to cost is far more important than the frame area of the gauge. This is because the higher definition obtainable from 16mm. and 9.5mm. becomes a matter of real significance only when you are projecting a big picture — and most amateurs do not project big pictures in their homes. If 8mm. can satisfactorily provide a well-defined image on a 4ft. screen, they are not going to pay three times the price (in terms of running time) for better definition. Nor will they consider it worthwhile to turn their backs on a welter of relatively inexpensive equipment for the less varied and more expensive 16mm. apparatus currently available.

When you buy a cine camera, obviously you intend to use it and, while the first fine careless rapture lasts, you are quite certain you're going to need plenty of film — otherwise, why pay £30, £40, or even £100 for a camera? At that time, the thought of nearly £4 for four minutes of 16mm. colour film is frightening . . . so you choose 8mm.

During the next few weeks or months, you aim your camera at almost anything that moves, taking pictures of the family, your holidays, swans on the river, baby on the

Continued on page 543

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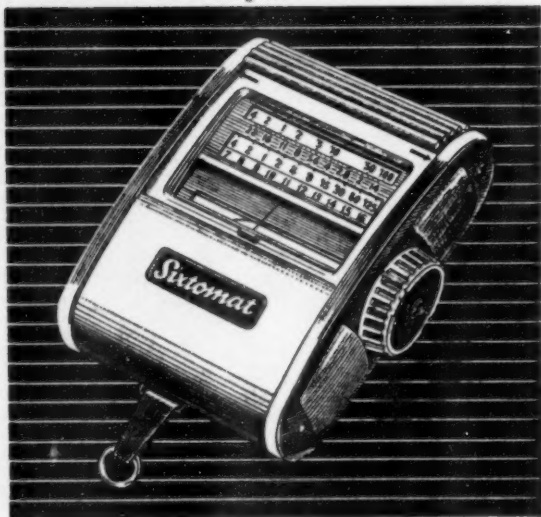
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THE UNINITIATED frequently wonder why both a camera and a projector should be necessary. Surely one has only to cut a hole in the camera gate pressure pad and stick a lamp behind it and there we are! Oh yes, and it has been done. There have been several such instruments marketed in the past and they no doubt gave their owners considerable pleasure; but there are snags—serious snags. Before we go wholeheartedly into a discussion of projectors, it would be as well to see what these snags are.

First, there is the matter of flicker. We are only able to appreciate a moving picture because of something known as "persistence of vision." If it were not for this, the rapid projection of a number of still pictures would not result in the smooth movement to which we are accustomed, but would look just what it is, a series of still pictures with "black-outs" in between. The eye, however, due to this "persistence of vision" business, impresses a picture on the brain which does not cut off when the picture is obscured, but fades away comparatively slowly, thus "persisting" until the next picture becomes visible.

Although the eye is conveniently accommodating in this respect, it is not so helpful in another direction, so that the "blackouts" between the pictures become painfully visible as flicker. It is generally agreed that normal vision will accept a flicker frequency of 50 per second as being invisible, so that a given amount of light, interrupted 50 times a second, will appear as a steady light of an intensity reduced by the duration of each "blackout." This means that if each blackout at 50 per second lasts for a hundredth of a second, the intensity of the light is reduced by half.

If our camera shutter is of the disc type, with 180 deg. cut away, this is just what will happen, but the camera runs at 16 f.p.s. (for silent projection) and we have therefore 16 flickers per second, not fifty! This will certainly give us a moving picture, but we shall probably get a headache as well! If we keep the illumination very moderate, a matter of a few watts, the flicker will not be so uncomfortably obvious and we can strike a compromise which is just about tolerable. This is precisely what the makers of camera/projectors did, and the result had much in common with the modern animated viewer, including the size of the picture!

Cine cameras, to be reasonably portable, must be made as small as possible, and this, in turn, cramps the style of the designer who would produce a combined instrument. The Midas, a long de-

- **What factors affect screen brightness?**
- **Where does picture unsteadiness arise?**
- **Does the lens get all it could from your films?**

These are some of many practical questions answered in a short series which explains, in simple terms, the fundamentals of projector design.

BY W. H. ROBERTSON

Inside Your Projector

fect camera/projector of first class workmanship, was somewhat larger than the average camera, was electrically driven, the batteries providing for the light when projecting, and was fitted with a 3 volt torch bulb of about 1½ watts consumption to provide the illumination. A 10in.-wide picture was just about possible!

The Campro was another, less ambitious instrument which featured an interesting lens with a special large stop for projection. This large aperture was unsuitable for "taking" because definition and field coverage suffered, but was considered good enough to project the picture and enabled the owner to get a bit more light from his very low power projection lamp.

The main snag of the camera/projector then, is unbearable flicker, which can be made a little less unpleasant by using illumination of such low power as to be inadequate for any normal purpose. This puts the matter in a nutshell! Only one camera-projector combination outfit has appeared since the war: the American Wittnauer, which is altogether a higher grade instrument than pre-war efforts. Despite all the neat features that can be designed into such an outfit, it obviously does no more than can be usu-

ally be done more easily in a separate camera and projector.

This little bit of history has established one thing anyway: that we need a flicker frequency of about 50 per second if we are to enjoy our moving pictures in comfort. It so happens that 48 suits us better than 50, because 48 obscurations per second are comparatively easy to obtain, for we get three per picture at silent speed ($3 \times 16=48$) and two per picture at sound speed ($2 \times 24=48$). This, then, is the standard accepted throughout the industry and in the full-size cinema, only the very cheapest and simplest narrow gauge instruments falling short of it.

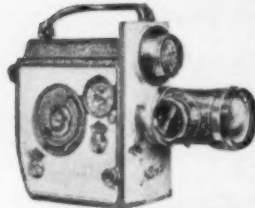
Most projectors for amateur use have to run at silent speed as well as sound speed, so the three obscurations per picture is standard. It is perhaps worth noting that the brighter the picture, the more it shows up flicker. Also, the higher the flicker frequency, the less evident the flicker. So any future developments giving brighter pictures should logically be accompanied by an extra blade on the shutter!

SHUTTER AND PULL-DOWN

It may seem odd that we should start our discussion by singling out the requirements in the shutter, but it is not at

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Inside Your Projector—

continued from page 531

all odd really, as the design of the shutter dictates the design of the entire film transit mechanism. So, logically, we will continue and investigate the shutter in detail before we look at anything else. Furthermore, we will stick to silent machines running at 16 f.p.s., because the shutter and transit mechanism for these are less easy to design than for sound machines running at 24 f.p.s.

We will assume that the machine is to have a disc shutter, running at the same speed as the transit mechanism—one revolution per picture. During this one revolution we need three obscurations and will therefore have to have three blades on the shutter. The human eye is an awkward beast in some ways. It will accept a 50 per cent obscuration rate as flickerless only if each obscuration lasts the same length of time. So all our blades must be of the same size as one another.

At this juncture life gets complicated for the designer and as a first shot he divides his disc equally into six parts, three of which will be cut away. Such a shutter is 50 per cent. efficient (50 per cent. light and 50 per cent. dark) and anything less than this is poor design indeed—it is bad enough to lose half the light, let alone more.

And what are his blades like? 60 deg. each! This is indeed a far cry from the 180 deg. odd of the camera shutter, where for half a revolution the claw can pull the film down in a comparatively leisurely manner.

Now we have to cover the gate aperture, pull down the film and uncover the gate again in 60 deg. movement of the shutter. At 16 f.p.s. and a sixth of a revolution, the whole thing has to happen in $16 \times 6 = 96$ —a ninety-sixth of a second—three times quicker than it does in the camera!

There have been simpler mechanisms, with two-bladed shutters—the old Pathe 200B, for example—and with equal blades and spaces, 90 deg. of cover becomes available instead of 60 deg. Shutters with one wide blade for covering the film shift and two narrow ones to break up the flicker have also been used but both arrangements are unsatisfactory unless lamp power is strictly limited.

The brighter the picture, the more noticeable does flicker become, and since almost all modern projectors are capable of giving really brilliant pictures, the three-bladed shutter is practically universal. Some, however, have one blade running at three times "picture speed," at least one has a two-bladed shutter running at one and a half times picture speed, and some have a barrel shutter which has, in effect, two blades and also runs at one and a half times picture speed.

In all cases, the result is three obscurations per picture, and the high-speed rotary

shutters have the advantage of covering and uncovering the gate in a relatively quick manner, while the barrel shutter cuts this period still further by covering from top and bottom simultaneously. On modern projectors intended to run at silent speed, anything less than 3 obscurations per picture would not be acceptable by present-day standards.

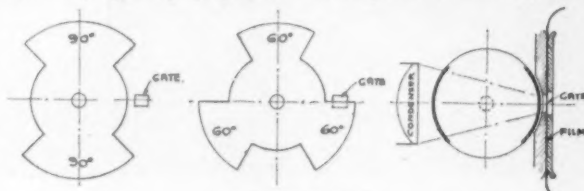
We shall have more to say about shutters later, but this preliminary canter will help towards an understanding of the working of the rest of the mechanism and will do much to classify the whys and wherefores of transit mechanism design.

LAMP AND OPTICS

THE LAMP has a very big influence on the design. It can range from a torch bulb in a simple hand-driven machine to a 750 or 1,000 watt high efficiency lamp which needs a gale of cooling air directed at it all the time to prevent the glass bulb from melting! Generally speaking, projection

popular a few years ago, because it works directly from the mains without need of transformers or resistances. Also, a high wattage—e.g., 500 watts—sounds just wonderful in the publicity matter! These 500 watt lamps have about eleven coiled filament sections, arranged in two planes, and staggered so that all eleven of them can direct their light in the right direction, and the effect is to provide a square of intense white light which is, to all intents and purposes, even in its distribution.

These lamps should be treated very gently, and once in use should never be subjected to any kind of a bump, as the filaments become very brittle and will break easily. They should never be supplied with a voltage even slightly in excess of the rating and it is preferable that they should be preheated and not switched on to full voltage from cold. The projector should have either a switch-controlled series resistance, or a rheostat with which the lamp can be warmed up by turning the



SHUTTERS

LEFT: Two-bladed shutter gives 48 obscurations per second—and therefore a picture reasonably free from flicker—when the projector is running at 24 frames per sec. Cutting off exactly half the light, it has an efficiency of 50%.

CENTRE: At 16 f.p.s., the flicker-free minimum of 48 obscurations per sec. can be achieved with a three-bladed shutter. For this to have the same efficiency as the two-bladed, its sectors must be 60° each and the pull-down (which has to be completed within one black-out period) must be speeded up.

RIGHT: A barrel shutter. This cuts off the light more rapidly than a rotating disc (the sectors operate simultaneously at the top and bottom of the beam) but cannot be used unless there is plenty of room between lamp and gate. Best-known application of these shutters is in the 16mm. Simplex-Ampro range.

lamps up to 50 watts or so can be run with natural ventilation (i.e., convection), while anything larger needs some sort of fan cooling, the required amount of air increasing as the wattage goes up.

All projection lamps have a concentrated filament, for reasons which we shall understand presently, and all are run at a higher temperature than the normal house bulb so that they will deliver a whiter light and more of it. The price paid for this is a reduced lamp life. Lamps designed for use at a mains voltage of 240 or so will have filaments made up of fine wire. Other things being equal, these are not likely to last as long as those made for a lower voltage with a thicker wire. Furthermore, the higher voltage filament will be longer and therefore cannot be concentrated into as small an area as the lower voltage one, and is, as a consequence, less efficient, both electrically and optically.

Nevertheless, the 500 watt, 240 volt lamp, despite its inefficiency, became very

knob slowly to full on. If your projector uses one of these lamps and has neither of the above forms of control, get one fitted if you can!

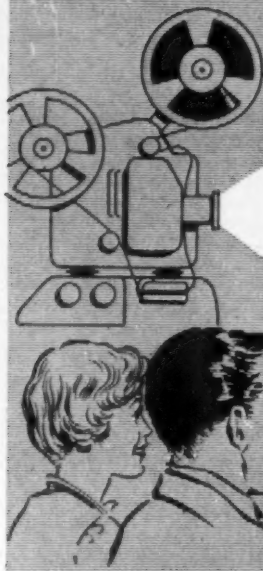
Greater efficiency, and usually longer life, too, will be obtained from lower voltage lamps, and since many countries have a mains supply of 110 to 115 volts, lamps designed for this range are plentiful and are frequently to be found even in projectors of British design. With these, however, a resistance or transformer becomes necessary in this country. The resistance will be small, inexpensive, gets very hot, and will waste current. On the other hand, the transformer will be large, much more costly and heavy and will waste very little current. Some projectors have the transformer or resistance built in, and in the latter case some of the cooling air intended for the lamp is deflected to cool the resistance, a neat and unobtrusive arrangement.

The need for smaller filaments and

Continued on page 535

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Inside Your Projector—

continued from page 533

better life has produced lamps for working at even lower voltages. An outstanding example of a high efficiency compact filament lamp is the 12 volt 100 watt type. This is very efficient indeed, and with properly designed optics gives a light comparable to that provided by some arrangements of much higher wattage at a higher voltage.

Low voltage means high amperage, however, since volts multiplied by amps equals watts; the above 12 volt lamp therefore consumes nearly nine amps. The cables feeding it must be of correspondingly heavy section, otherwise the resistance in them will reduce the voltage and cause a loss in efficiency.

There has, of course, been a revolution in lamps for 8mm. projectors over the past three years. First, the original 12 volt 100 watt lamp has been redesigned to incorporate a more compact filament, close wound on a rectangular (not round) mandrel, to present a greater proportion of its area to the condenser lenses. Secondly, another major break-through in efficiency came when Philips designed a lamp that needs no condensers at all: the 8 volt 50 watt lamp has an ellipsoidal concave mirror actually formed on the wall of the bulb. This mirror collects light over a considerable angle from the very compact filament, and throws the beam forwards so that it can be concentrated on the gate. Using 50 watts in this way, it has proved fairly simple to get much greater screen brightness than from a mains voltage 500 watt lamp.

Other manufacturers also produce this type of lamp, and Saipa in France make one of the same rating, but with a mirror contained in the bulb. A 12 volt 100 watt version is also available on the Continent. Sylvania in America chose to follow the same line of approach, also by putting the mirror in the bulb and adding the latest method of construction: wire pins in all-glass base. Their first Tru-Flector lamp, 115 volt 150 watt, was less efficient than the 21½ volt 150 watt lamp (now made in Britain by Atlas) which followed it.

An additional version of the same general type, of the same voltage and wattage, is horizontal mounting and incorporates a larger mirror, to suit a really wide aperture ($f/1.2$) projection lens, against $f/1.6$ of the earlier Tru-Flectors. This type of lamp on 8mm. achieves higher screen brightness than any tungsten filament lamp of the conventional high wattage type—and without undue electrical consumption.

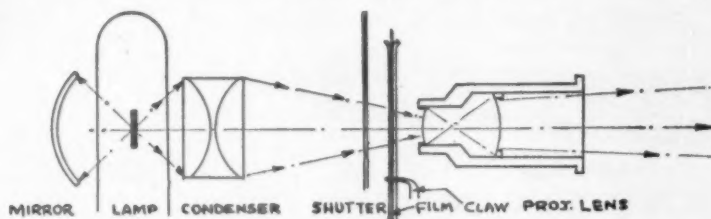
These very low voltage lamps are invariably fed through transformers and used on a.c. circuits. Resistances are out of the question for, to take the case of the 12 volt lamp at 100 watts, the current is 8½ amps. This, at the normal mains sup-

ply, 240 volts, would mean a total consumption of $240 \times 8\frac{1}{2}$ = just over 2 kilowatts; of which 100 watts does useful work while the remaining 1,900 watts would be wasted in the resistance, a most uneconomical procedure—except perhaps in the depths of winter when the 1,900 watts might be used to keep the audience warm! Transformers can have a high efficiency even in the small sizes so that one with a 12 volt 100 watt output will consume very little more than 120 watts at the input.

Some people refer to the low voltage lamps as "cold light", but this, of course, is an incorrect term. All lamps with filaments produce heat, in fact, quite a lot of the energy going into the lamp is converted into heat. The lower the power, i.e., wat-

may last 150. There is no knowing, so it is necessary always to have a spare to hand. However, the average life of properly treated lamps should be about what the maker specifies.

Sometimes the filament burns out suddenly and without warning when there has been no visible sign of deterioration, while at other times the bulb will become so blackened as to reduce the light considerably before the filament fails. Dreary reading this, with lamps the price they are, but let the owner make an imaginary sacrifice to the Goddess of Luck, cross his fingers and hope for the best! We have had a 500 watt 240 volt lamp go in less than 20 minutes, and a 250 watt 240 volt which still works after 20 years. (Yes, years!)



Conventional lamp and condenser optics.



LEFT: A biplane filament blocks most of the light reflected back from the mirror, so that efficiency is not greatly increased. The reflected image does however help to fill up gaps between the filament coils and in consequence the screen is more evenly lit.

CENTRE: With a flat grid filament, the large space between coils can be filled with the reflected image. But for this to happen the mirror must be accurately positioned. The adjustment can be made by holding a magnifying glass in front of the lens and projecting on the screen an image of the filament and its reflection. When interlacing is correct, they will appear as on the right.

tage, of the lamp the less the total heat generated, and this is just as true of projection lamps as it is of other filament lamps.

So lower wattage lamps do produce less heat, but as they put most of the light on the gate, most of the heat goes with it. There is hardly any surplus heat to warm the lamphouse, so very little forced cooling is required. It is, however, preferable to have a fair velocity of air on to the film in the gate, and a heat-absorbing glass is also sometimes used between lamp and gate.

The makers will not guarantee any minimum regarding lamp life, but state an average expectation which is normally 25 hours for most popular types of projection lamp. In actual fact, and assuming the best of care in use, lamp life is a matter of luck, and a lamp may go within a few hours or

In the case of the former, the makers replaced. It is therefore worthwhile to approach them if a lamp goes very soon after one starts to use it. They will look at the lamp and try to decide whether the failure was premature or due to a fault in use or handling. If they think the failure due to a fault in the lamp, they will usually replace it.

There is not much more that we can do about the lamp. Have a look at it occasionally and see if the filaments are becoming distorted out of position, and if the bulb is becoming blackened. Either of these faults will probably mean failure before long, while if the glass bulb shows a blister near the filament, beware! This means that the cooling is insufficient.

Check the fan and see that it is secure on its shaft and that there is no obstruction.

Continued on page 536

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PHOTAX

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Photax (London) Ltd., 70, Charlotte Street, London, W.1.
Photax (Ireland) Ltd., 16, The Grafton Arcade, Dublin.

Correspondence

Gate Condensation

CONDENSATION of moisture in the gate of the Bolex 18/5 projector (Ivan Watson's article of September 14, p. 411) puzzled me too and I asked Cinex for advice. They suggested that before screening monochrome film, the projector should be warmed up by running it for five minutes with the lamp on.

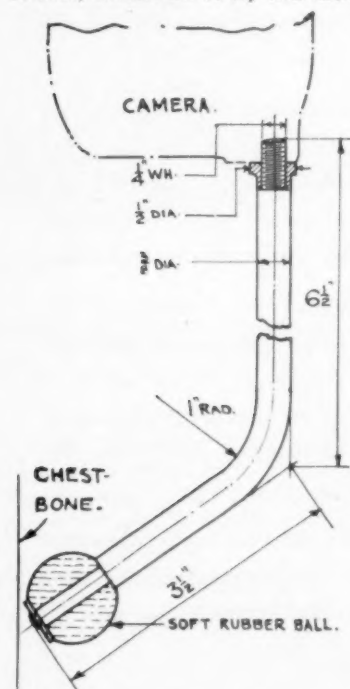
This is a bit of a nuisance, but it does minimise the trouble. If any globules of moisture form, they can be removed by stopping the projector, swinging the lens to one side, and wiping the front aperture plate. This takes less than five seconds.

Clevedon,
Somerset.

H. A. POSTLETHWAITE

Camera Steadiness

MR. IVAN WATSON'S comments on the use of a pistol grip for cameras (September 14 issue) reminds me of my own efforts



to obtain picture steadiness when operating the camera off the tripod.

I had to dismiss the use of the pistol grip for two reasons. First, the awkwardness for carrying purposes of the camera plus grip. Second, the fact that whereas the camera may be held by the left hand and the grip by the right, both hands by

the nature of things are without any sort of rigidity.

I finally came down to the very simple device of an aluminium rod that can be screwed into the tripod bush and is long enough to reach down to the bony part of the chest. Here, one's body is nearly rigid and does not move even if a deep breath is taken while shooting. I now always use this support, and carry it in a clip on the camera case.

The drawing shows the idea. The upper end of the rod is turned down, threaded (1/4 in. Whit.), and fitted with a collar which is adjusted so that, when the support is screwed into the camera bush, the lower end faces rearward into the chest. For comfort, mine has a soft rubber ball fitted where it contacts the body, but this is not really necessary: if I were making another I would just put a spherical end on the rod. The drawing shows it applied to a Bolex. The shape, of course, may have to be slightly modified for use with other cameras — and other chests.

Enfield, Middx.

H. J. TURPIN

Half Sixteen

MY FEELING about Half Sixteen is that few of its advocates are looking at it through unbiased eyes. It is no new experiment. D. M. Neale published details some years ago, as did a correspondent in *ACW*.

Before good equipment is carved up these aspects should be considered:—

1. *Economy.* This can be achieved in many simpler ways. If 16mm. apparatus is already to hand, the use of out-dated and ex-Govt. stock, and advance planning of button pressing, will effect big economies without problems.

2. *100% better definition.* Not so. Only a wider format. A close-up head reaching from top to bottom of the screen will have exactly the same definition on 1/16 as on 8mm. standard. Perhaps big ears fill up the blanks on either side!

3. *Sound quality.* This can already be improved at no more cost than that ruling with 1/16 by the simple method of running the camera faster. This applies to single speed cameras too, as in most cases a governor will be fitted. In addition, picture quality will be improved, too; the smoother action and more frequent overlapping of images (and grain) is ample for the purpose of "improving" on a standard which is already acceptable.

4. *Not needed.* Nobody wants another gauge. I use two, and would use three if I could afford it. If the deficiencies of 8mm. are becoming irksome, it shows the

owner is becoming critical, which is good, and it is to be feared that his all-seeing eye will soon tire of 1/16 for its own deficiencies.

Stockport Cheshire.

JOHN SHAW

Regarding Mr. Shaw's second point, the height of the half-sixteen frame is the same as the width of an 8mm. frame. The dimensions of the respective projector apertures are in fact 0.172in. and 0.129in.

User for Life

WHILE ON holiday in Holland recently, I took with me six rolls of Kodachrome II (yes, six. I have a friend!). When they were returned from processing, one roll had several blemishes along the emulsion side which extended through about 20-25 frames. It gave a spidery squiggle along the screen on projection and if the film was held at an angle to reflect light it looked as though it was dried wrongly or had a layer of emulsion missing.

The scene containing the most noticeable of these blemishes was returned to Kodak for examination, together with the box and the leader bearing the code number. A few days later I received a postcard saying that an investigation was in hand. Then, to my delight, came a letter from Kodak telling me that "the blemishes on this film are the result of an unfortunate accident during processing", extending "sincere apologies for what happened", and enclosing a new roll of Kodachrome II by way of compensation.

With this excellent service and the wonderful performance of the new film, I am now a Kodak user for life.

Dublin 9.

J. O'BRIEN

2,000ft. Cans

A CORRESPONDENT complains, in *ACW* of September 7, that he is unable to obtain cans for his 2,000ft. spools. We felt that we could not let his letter go by without mentioning that for a very considerable time we have been selling our 2,000ft. Easiload spools complete with 2,000ft. cans.

The fact that we sell them only with cans shows that we agree both with your correspondent and Centre Sprocket that this is the right way to store films.

D. A. POWER,

Sales Manager, Actina Ltd.
London, W.C.1.

Processing Colour Film

I HAVE READ with interest the correspondence on processing colour film, principally Ferraniacolor, and feel that perhaps I can offer a useful contribution. I have

Continued on page 540

BAUER***plan for***

We are as interested in picture quality as you are. Never forget that this is governed by the least efficient unit used in taking and projecting, no matter whether it be the camera, the film or the projector. Any one can affect the quality of the picture on the screen.

It is logical that a camera and projector created by the same expert designer and made in the same factory should combine to give better results than two pieces of equipment of different makes. Bauer equipment has long been recognised as the finest in the world, but good equipment is costly and therefore not within the reach of every cine enthusiast.

Appreciating this—and because it is in our own interest—we are making a special “double-benefit” offer. It will enable you to afford the finest equipment; it will also benefit us, by ensuring the use of Bauer cameras and projectors in combination and so providing the highest possible standard of quality in the projected picture—quality that will inevitably cause you to recommend Bauer.

The quality of Ferraniacolor 8mm. film speaks for itself: introduced into Great Britain this year it has become the regular choice of more than 50,000 amateur cinematographers. Could there be better proof?

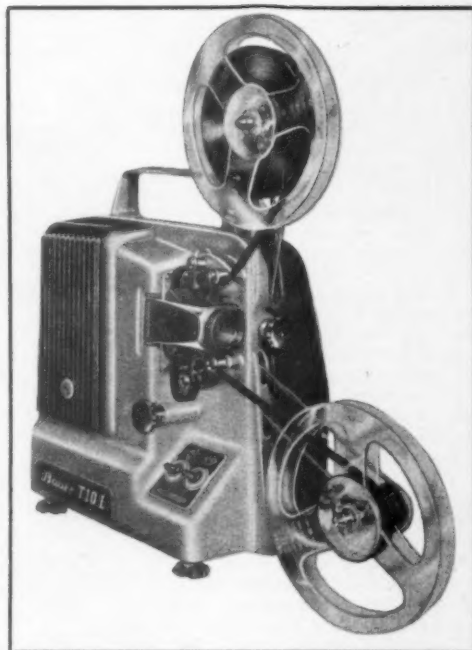
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This opportunity of obtaining a complete matched outfit of such quality at a substantial saving is one that is worth your serious consideration. If you wish to buy the above items separately over a period, they can still be obtained at the normal list prices and you will still get the finest 8mm. equipment that money can buy.

Correspondence—

continued from page 537

been using and experimenting with a number of types of colour film, both still and movie, for some time.

Some years ago, being completely disenchanted with Kodachrome, I started trying every film stock then on the market for still use, both for home and commercial processing, and I have made a point of continuing to do this to the present day. I have seen some beautiful results from Ferraniacolor but was never able to attain them myself, my final choice being Anscochrome, a really beautiful film (not to be confused with Super Anscochrome, which is very much faster).

This was still stock, but eventually I succeeded in obtaining 16mm. Anscochrome (sold without processing charge), and for the last four years I have been processing my own colour movies at home with excellent results. But I am not yet satisfied. The system I use is the regular one of the film on a "spider web" drum wound in and out of a small bath of solution, and all conditions must be perfect for this to succeed. Variations in room temperature, for example, will give some terrible colour fog, and here is where I ask for some help.

I have designed a reel to be made in Perspex, for deep immersion processing—the ideal way—but so far have been unable to find anyone to make it for me. If any reader knows of a deep immersion (or full immersion) system of processing at a reasonable price, or someone prepared to make my reel, again at a reasonable price, I would be delighted to hear from him.

When I began processing Anscochrome, eight chemical baths were involved, and the time taken was 2½ hours, but I have now reduced the number of baths to four, and the time 1½ hours. Anscochrome can stand a lot of abuse, variations in exposure of two stops either way still producing good pictures. It is rated at 32 ASA, but compensated processing will give film speeds of from 10 ASA to 100 ASA.

Once, through a series of errors, I exposed at an estimated 180 ASA, compensated accordingly, and achieved good pictures—not excellent, but good. I used to expose constantly at 100 ASA, but for convenience (or laziness) now standardise at 64 ASA. (I use three cameras, one of which contains FP3 at 64 ASA, so one meter reading covers all three.) I buy Anscochrome in 1,200ft. lengths, and spool on to 100ft. spools, the cost, including processing, being about £2 10s. per 100ft. This cost can be reduced by processing more than 100ft. at a time.

All this does not, however, help Mr. Meek to process Ferraniacolor. He must find a full immersion process, as the emulsion of this film is so soft that even ordinary spray washing will damage it irreparably, and it is a very difficult film

to manage. He will find all the solutions he needs listed in *Colour Films* by C. Leslie Thomson. I wish him the very best of luck; it is a very satisfying thing to shoot, process, and show your own films, as I can personally assure him after having handled 6,000ft. of 16mm. and thousands of colour slides in this way.

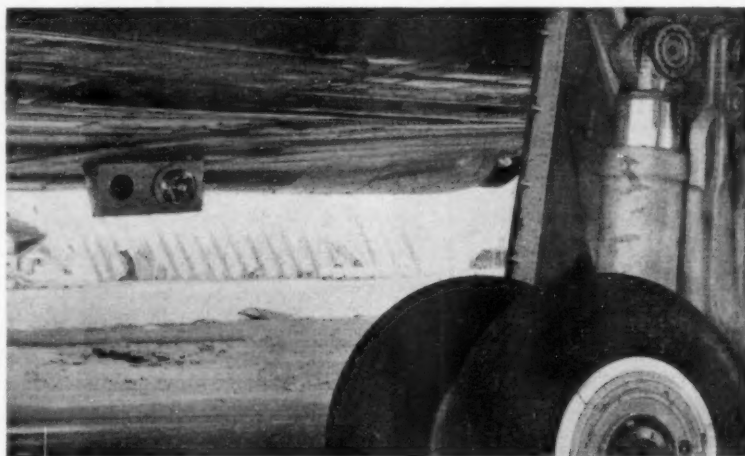
I might add that my experience of colour films embraces Kodachrome, Agfacolor, Gevacolor, Ilford Colour, Ilfachrome, Ferraniacolor, Ektachrome (the nicest, but so unstable) Kranzcolour, Ikcolor, Adoxcolor, and Perutz, most of which I have also experimentally home processed.

Dublin, 6.

THOMAS M. LAD D

Spider type (skeleton) drum tanks give much more aeration of solution than a cylindrical drum tank, which may prove quite satisfactory. Note however that

results with all drum type processing outfits are sensitive to the room temperature, because the film is exposed to the air for a high proportion of the total time. Yet agitation is extremely efficient. Possibly the simplest of the total immersion processing systems is the apron, which is wound up in a roll with the films. Raised lips along the edge of the apron space the turns of film apart. A simple non-corrodible reel holds the roll of film-plus-apron. The American Morse G3 tank (now available in Britain) is another total immersion system, in which the film is wound to and fro between non-corrodible reels. In this system, because not all the film is exposed to the solution, the processing times must be suitably lengthened; there is some doubt whether those colour films with unduly soft emulsions will withstand the treatment without damage.



Housing for the 16mm. camera on the B.O.A.C. Comet IV. To the right of the camera aperture is a 500W. landing light, trained on the main undercarriage wheels.

16mm. Solves Problem for B.O.A.C.

Comet Tyre Trouble Explained by Slow-Motion Film

A 16MM. CINE CAMERA, trained on the undercarriage of a Comet IV, has solved a problem that confronted B.O.A.C. engineers: why, on landing, did the tyres "scuff" and occasionally burst?

In order to study the behaviour of the tyres at the moment of touch-down, members of the Corporation's design and photographic staffs mounted the camera, a Bell & Howell, in a housing under the Comet fuselage, aiming it at the port four-wheel undercarriage. In the same housing, aligned with the camera, a 500W. DC7 landing light was installed. A recording device measuring airspeeds

and braking pressures was synchronised with the camera, which was operated from inside the aircraft by remote control.

Eight landings were made, each different in some respect, with the camera running at 64 frames per sec. Subsequent frame-by-frame analysis of the resulting films showed that the trouble was due to uneven loading of the wheels—those at the rear tended to be locked by the brakes when they were only just touching the runway—and could be cured by a slight modification of landing technique. This has since been made standard practice in the Comet IV fleet.

A MOVIE
MAKER
at the
CINEMA

GIVE YOURSELF UP to a Vital Burning British Film

BY ALEC GITTINGS

EACH NEW FILM from Woodfall so towers over the dry stubble of average British production that it can be judged only against its predecessor from the same company. To set *A Taste of Honey* against *Saturday Night and Sunday Morning* is to compare it with the best feature ever made in this country; it's not as good — but it's in the same class. Shelagh Delaney's play offered director Tony Richardson a better original to work from than Karel Reisz had with Alan Sillitoe's novel, but the raw impact of the original Theatre Workshop production has been filtered away a little.

The script, by Delaney and Richardson, is faithful enough to the play. The heroine, Jo, is a young Salford schoolgirl dragged by her mother from one set of cheap rooms to another as each successive landlady insists on the rent. She is sickened by her mother's endless succession of lovers, especially the latest, a one-eyed loud-mouthed character who continually threatens to send her packing. So she spends a night with a coloured sailor, half-aware he may never come back to her. She leaves her mother and lives with a friendly young homosexual who looks after her and nurses her through her pregnancy until her mother turns up, abandoned once again, and kicks the boy out. Jo's taste of honey is over.

Against the safe gentility of so much British production this may sound sensational, even sordid. But Delaney makes it a marvellous affirmation of her faith in people's ability to survive the grimmest environments. Jo, beautifully played by Rita Tushingham, has something of Arthur Seaton's resilience.

The film opens with a pre-credit scene of Jo at school. When she gets home she and her mother pack their things and wriggle out of a window. They catch a bus, and the credits come up against the view from the bus window as they go through Manchester. Grimy statues thrust out a finger or beckon to the sky. A soot-encrusted Victoria squats in dirty glory. "God washes whitest of all," proclaims a huge poster outside a church. It's a wonderfully ironic sequence, establishing the setting with a bitter humour and suggesting pointed things to come.

The production of this film was delayed for a year by Richardson's insistence that everything be shot on location. Until the success of *Saturday*

Night and Sunday Morning the distributors weren't prepared to take a chance on such revolutionary methods. The interiors were filmed in an old house at Chelsea. The yard at the back of the Royal Court Theatre's workshop was used for some exteriors, but most were filmed around Manchester, Salford and Blackpool.

And what exteriors they are! The characters seem rooted in these grubby streets. The smelly canal has a sad beauty of its own. One extraordinary shot shows Jo's lover dwarfed by the turning shadows of a swing bridge. Another briefly isolates a couple at the foot of a jet black arch. Walter Lassally, the cameraman, began his film career as an amateur. Until recently most of his work has been con-

fined to British documentaries and Greek features, but I'll be surprised if his bold and gritty photography of *A Taste of Honey* goes unnoticed by other British producers.

There are signs that some of the discoveries of the directors who began with the Free Cinema movement (Richardson co-directed *Momma Don't Allow* with Reisz) are turning into visual clichés. Fairgrounds, so devastatingly explored by Lindsay Anderson in *O Dreamland*, are certainly being over-used. Here Richardson uses two fairground sequences, one at Blackpool underlining the tawdriness of the amusements as Jo is dragged around by her mother, and another which is romantically treated

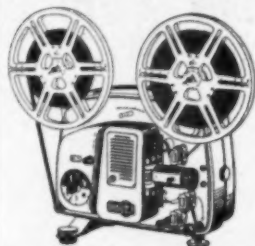
Continued on page 546



In "*A Taste of Honey*" the characters belong to the setting: ABOVE Manchester Ship Canal, LEFT Blackpool Pier. With heroine Rita Tushingham in these two location scenes are Murray Melvin and Dora Bryan.

SIDE BY SIDE

The only way to compare competing makes of cine projectors is to see them running side by side—to watch a change-over on the screens so that you can judge picture quality, brightness, steadiness, and every other feature that makes for good projection. This is just what our projection theatre offers you: any projectors in which you are interested—8mm. or 16mm., silent or sound—can be set up side by side for your inspection. Here are two of the many 8mm. projectors which we stock:

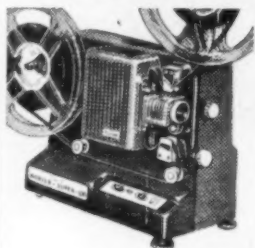


BOLEX 18-5

This is a superb projector, possessing every refinement you could wish for, and one of which you would never dream: the special slow-speed switch which enables your films to be projected at 5 frames per second, so that you can use the machine for editing, and can study movement and detail without actually freezing the movement: all this without flicker, and without blistering or drying out your films. When run at the normal 18-frame speed, the 18-5 has a 3-bladed shutter, which automatically *grows* into 9 blades as the speed is reduced. Further protection is afforded by the infra-red absorbing filter.

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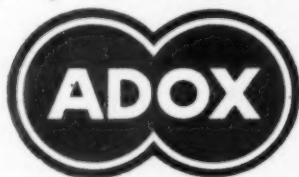
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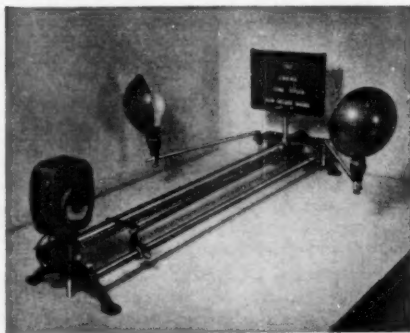
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Movie Miscellany—continued from page 529

lawn, the flowers in your garden—even the traffic that passes your house. This period is vital to your evolution as a cine man, for one of two things will happen: (a) you will become a little bored with unrelated bits and pieces and you will tend to use your camera less and less, until it is brought out only for holidays and weddings; (b) having had your preliminary fun, you will want to make worthwhile films.

In either event, the tendency *must* be to use less film. If, when the novelty has worn off, you are going to use your camera only once or twice a year, the cost of film stock ceases to be a matter of any real significance. If you set out to make really worthwhile films, you soon learn that film-making is an enthralling but time-consuming hobby and there's a limit to the footage you can use *creatively* in any one year. So, once again, the cost of film stock is, in fact, less important than you believed when you bought your first cine camera.

You'll never be able to convince anyone of the foregoing facts until he has experienced them. When a man buys his first cine camera, he has little or no idea of the direction he is likely to take—whether cine is to become for him an absorbing interest that will enthrall him for the rest of his life or merely a nine-day wonder that will degenerate into seasonal bursts of snapshooting.

In these circumstances, it is hardly surprising that the amount of 8mm. equipment sold to amateurs far exceeds that of any other gauge. But suppose we could somehow invest our imaginary beginner with the faculty of precognition so that, at the time of purchasing his first camera, he would know, and be convinced of, facts which normally can be acquired only by experience. Would he then say to himself: "I shall not, in any case, be using a great deal of film stock, so I'll choose the quality substandard gauge—16mm."?

Which Gauge Gives Better Value?

I doubt it. For less than £50, plus the cost of a tape recorder, he can have an 8mm. projector that offers reasonable sound facilities. A magnetic/optical sound projector will cost him about £300—a sizeable investment for the most ardent amateur. A top quality 8mm. camera with a first-class lens can be bought for £70 or so; the 16mm. equivalent costs very much more.

For this considerably heavier initial outlay, what are we offering him? Only, I submit, better definition in the event of his requiring a theatre-size picture for a big public presentation, better quality prints in the event of his wanting prints, physically easier editing . . . and possibly a smoother passage for the organisers of a public presentation. (I am *not* going to admit that 16mm. sound is significantly better than 8mm. because, frankly, neither is anything to get very excited about. With a loop-synchroniser and a good tape recorder, you will certainly get sound quality that is infinitely superior to optical or stripe.) I cannot see that we can promise the purchaser of 16mm. apparatus any other gains, and the very last thing we can promise him is that the use of a bigger gauge will enable him to make better films.

For me, there is a still more important side to all this—the pleasure of identifying oneself with the activities of

one's neighbours. I have never made any secret of the fact that I have spent a considerable—some people might say *ridiculous*—amount of money on 8mm. equipment, seeking out the very best it could offer in the hope that one day I would be able to say to my friends: "yes, you *can* get superb results with 8mm. so don't fret because you cannot afford to buy 16mm. apparatus." The equipment I now own is insured for a substantial sum, and it has cost me a small fortune to find out what I wanted to know. I make this reference to what is, after all, a purely personal matter merely to establish that, if I had wanted to do so, I could have changed to 16mm. at any time during the past few years—and I could trade in my equipment tomorrow for some very serviceable 16mm. apparatus.

Satisfactions of 8mm.

But, if I did so, I should at once feel cut off from my cine friends, all of whom, without exception, use 8mm. I should lose my sense of identity with thousands of fellow 8mm. enthusiasts who read *ACW* and look to it for encouragement and guidance. If I used 16mm., I would *expect* good results photographically, and I am sure I'd never get quite the same thrill as I experience from some really impressive 8mm. photography. When I make films, I want to share and have to overcome the limitations that are imposed on my 8mm. friends. If I have been able to spend a small fortune on 8mm. apparatus, merely "finding out", I am happy to pass on any information I have acquired, and I do not regret, in any way, that I didn't dive straight into 16mm. from the very start—which would have cost a good deal less if for no other reason that there just isn't that amount of 16mm. apparatus to play with!

In a few short years, I have seen 8mm. grow up in a way that even the most fanatical enthusiast would have hesitated to forecast. I have seen it take its first brave and tentative steps from a little picture in the home to very nearly a full-size screen in a London cinema. I have noted, with satisfaction, that it is capable of winning Oscars. I have seen it at its very best and I know that, at its best, 8mm. has nothing to fear from any other gauge. So I shall not change. What we have seen so far is nothing compared with what 8mm. will yet achieve. The future is, I think, bright with promise . . .

Remind me to write an article about it in three years' time. I'll enjoy saying, "I told you so."

Filming Underwater Life—continued from page 527

with a mere 5mm. width of water. This is satisfactory for showing their progression through the water. For close-up detail, however, it is necessary to resort to microscope slides, in conjunction with macro and microscope objectives.

Increase in exposure should not be overlooked when shooting at such close range. It is a rough guide to say that a half-life-sized image on the focusing screen requires twice normal exposure, and a life-sized image four times normal.

Many dramatic events take place in this unseen underwater world—sequences which every sort of audience will find fascinating. And with patience and careful training of the actors, our cameras can record them in our own homes.

Shortly: FILMING SMALL MAMMALS

Making a Start

A SERIES FOR BEGINNERS BY H. A. POSTLETHWAITE

THE EDITOR'S TOOLS

EDITING A CINE FILM, as we saw last week, means cutting out the parts that are unsatisfactory or don't fit in with the rest, then joining the remaining scenes together so that they tell their story in the most effective way. An hour or two spent on this will improve even the simplest film—and it is of course much more convenient to give a half-hour show from a single 400ft. reel than to stop the projector every four minutes to change one small spool for the next. But quite apart from these practical advantages, editing can be as enjoyable—even fascinating—as any other filmmaking task.

If your film is to be more than a straightforward record of the family or a holiday, the way it is edited may matter as much as the way it was scripted and filmed. Continuity will be of first importance, and the timing of individual shots may make all the difference between a prosaic narrative and a forceful presentation of your theme.

Sorting and Scrapping

Such a film will most probably have been scripted and shot in accordance with a list of scenes previously prepared. As these are unlikely to have been filmed in the order of the script, the first job will be to re-sort them. Then a careful assessment will be made of each scene so that it links up with the scenes that immediately precede and follow it, and so that it lasts on the screen for the precise number of seconds that seem most effective. If a scene has been shot two or three times, the best of the takes will be selected and the others scrapped (or, perhaps, put on one side for emergency use).

But let us assume that you, as a beginner, are concerned with an unscripted holiday or family film, with scenes shot as opportunity offers, in no sort of logical sequence. It will often happen that you see a good close-up subject and film it on the spur of the moment. Later you may feel that it would be better to establish the close-up scene by showing one or two

medium or long-shots first. So you take these after the close-up and reverse the order at the editing stage.

Again, you may have taken a number of shots of a procession or a game from the same standpoint, and decide afterwards to interpolate a few close-ups of audience reaction to give variety. These can be taken the next day or a month later. So long as they appear to have been filmed at the same time as the main subject, they can be successfully spliced in.

For the mechanical side of editing, you need only a modest kit of apparatus: a splicer to join together pieces of film, film cement or splicing tape, a pair of rewind arms and one or two projection reels. There are also useful gadgets known as editing viewers (many are on the market) which enable you to view the film in motion, on a tiny built-in screen, as you wind it through by hand. Such a device makes it easy to find the exact frame at which to cut a shot for the best effect and can be a great help if a lot of editing has to be done. To begin with, however, you will be able to manage with a watchmaker's eyeglass.

There are two ways of splicing film. In the conventional (and professional) method, the beginning of one length is cemented to the end of the other with an overlap of 3/32in. (1/16in. on some recent splicers). The two pieces of film, emulsion side up, are clamped in the splicer, which trims the ends to give the correct overlap. The emulsion is removed from the lower piece of film, to the extent of the overlap, by means of a scraper (sometimes built into the splicer, sometimes a separate blade). After cement has been carefully applied to the scraped area, the end of the upper piece of film is clamped down under considerable pressure. The shiny side of the top piece of film is thus brought into firm contact with the scraped portion of the lower piece, and within about 15 seconds the two lengths of film are welded together (welded, note, not simply stuck).

Splicers for use with cement cost from about £2 upwards. The cheaper models make good splices, but are not

so convenient to use as, for example, the delightfully easy and fast Premier Automatic at £15 15s. The Agfa B (£7) tapers the ends of the film so that the joint is not appreciably thicker than the film on either side.

For your cement, buy either the brand recommended by the makers of the film you use or, in the absence of any recommendation or if you use a variety of different films, choose one of the "universal" cements suitable for tri-acetate film.

Splicing with Tape

In the alternative method of joining, there is no need for cement. The two pieces of film are joined without overlap by means of a patch of adhesive tape. The Ferrania dry splicer uses ordinary Sellotape; Quik Splice and Kodak splicers use special patches cut to the size required for the join.

These non-cement splicers cost between £2 and £5 or thereabouts, though there are a pocket model of the Quik Splice, intended for emergency use when a film breaks during projection, and the Baia Bantam, at under £1. Special splicing tape (not needed for the Ferrania, of course) costs between 2d. and 3d. per splice. It is perhaps worth pointing out that a half-crown bottle of cement will make thousands of splices and keep in good condition for at least a year.

The dry splicers are still comparative newcomers, and it remains to be seen whether joins made with adhesive tape will last as well as those made with cement. It has been suggested that the tape, particularly the ordinary cellulose variety, may become brittle or discoloured after a few years. The method is certainly quicker than cement splicing (except with the most expensive models) and the splices go through the projector quietly. However, cemented frame-line splices (those with only a 1/16in. overlap) are practically silent in most projectors, too.

Whichever splicing method is used, it is essential that the two pieces of film be joined in perfect alignment and with exactly the correct separation between adjacent sprocket holes. All splicers have little prongs which,

Continued on page 549

Handle on the author's box was shaped from a piece of softwood, but suitable alternatives can be bought ready made by those lacking his obviously above-average skill.

STORE YOUR SPOOLS IN THIS HANDY BOX

designed by D. CAMPBELL

THIS FILM STORAGE BOX is so simple to make that it is within the scope of everyone — and it needs the minimum of tools. The secret of the easy construction is that most of the wood is bought ready cut in strips and "prepared" (i.e., planed smooth). All one has to do is to cut it off to length, plane to width, and assemble the parts.

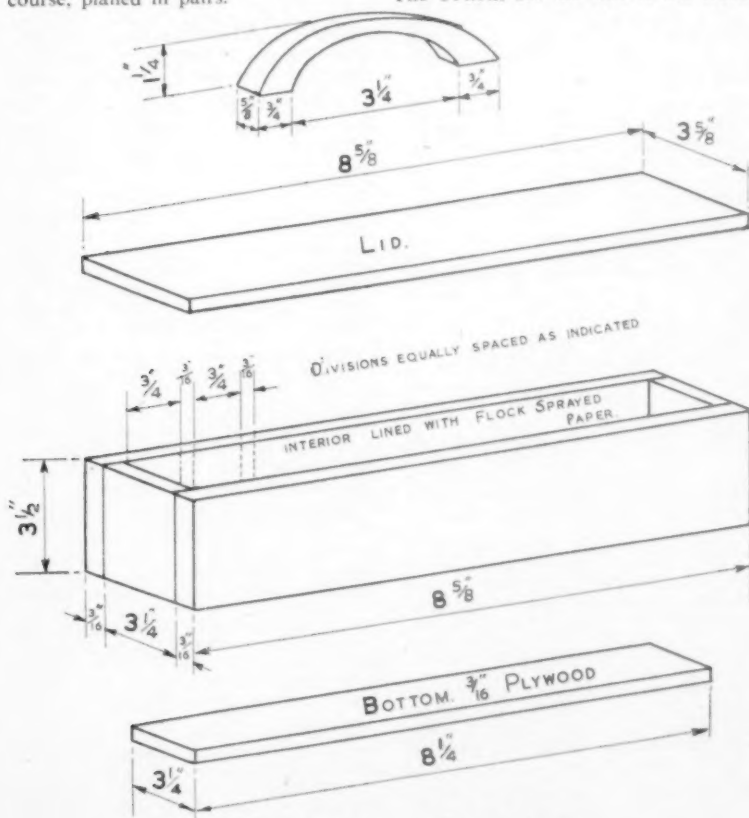
The box is constructed of 3/16 in. thick hardwood, bought in a 4 in. wide length. It is planed down to 3 1/4 in. for the sides and ends, and to 3 5/8 in. wide for the lid. Sides and ends are, of course, planed in pairs.

It takes 50 ft. spools of film, or 3 in. reels of tape.

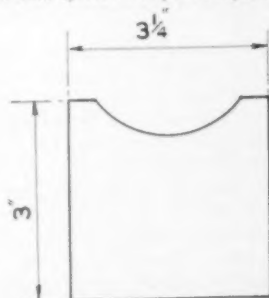
The body of the box is assembled by glueing all joints and fastening them with 20-gauge panel pins 5/8 in. long. Before final assembly, the interior of the body is lined with flock-sprayed paper — available in various weights and colours from F. G. Kettle, 23 New Oxford Street, London, W.C.1. I used the second most expensive grade, in green, and it cost 2s. 2d. per half-yard, plus postage. The bottom for the box is cut from



Adhesive labels are stuck to the inside of the lid against each of the nine spool compartments.



Dimensions of a container for 3 in. reels.



One of the divisions made from 3/16 in. ply.

3/16 in. plywood to fit snugly into the partly assembled body, and the inner side is also lined with flock paper, the edges of which are trimmed. The lid is not lined until after the handle has been fitted.

I used Croid Universal glue throughout, for it is fairly quick drying and makes sound joints. When the four sides of the box have been lined, the edges of the bottom piece of wood are given a very thin coating of glue. After it has been fitted in position this is pinned with panel pins — four front and back, and two at each end being sufficient.

The divisions, made from 3/16 in. plywood, are cut to fit snugly into the

Continued on page 549

At the Cinema—

continued from page 541

to stress the warmth of the relationship between her and the homosexual (a brilliant performance by Murray Melvin, who played the same part in the theatre). A street procession is quite pointlessly introduced, and it begins to look as if Richardson is overworking such backgrounds without always considering their relevance.

He makes particularly unhappy use of children. Most scenes are cluttered with half-a-dozen unwashed kids playing games and singing, but they behave like a kind of junior Greek chorus, running about in tidy formation, singing—sometimes with closed mouths—in harmony, and trailing the principal characters in a way that's quite at odds with the general level of realism.

The editing looks a little nervous. Most of the time it's smooth, even a shade over-quick, as if Richardson was worried about holding shots too long. "Who's Peter?" says Jo, and the film cuts to a close-up showing him. This kind of neatness is a little alien to the roughness of theme and much of the treatment.

Two montages of dissolves which mix each shot off the screen almost before it's made its effect seem symptomatic of Richardson's uneasiness. Jo wanders by the canal (several scenes here recall Ken Russell's film of Shelagh Delaney for *Monitor*), and the scene is treated in mixes. Later the same technique covers her pregnancy as the boy cooks and cleans for her. Tiny incidents are strung together to convey the passing of time and growing affection. But on both occasions one feels that the point could have been made in a single scene. The montages look uncomfortable in a film which generally makes us forget its technique by its sheer directness. Richardson seems over-anxious to set every dialogue against an appropriate background, too. At one point he whisks the principals into some caves just to heighten the atmosphere. But he has abandoned the taste for tilted angle shots which was so much in evidence in his earlier films.

The worst aspect of the film is John Addison's music, which never allows any scene to make its effect without scurrying in with a trill or thump to make sure everyone's grasped the point. The film's ending is especially unfor-

tunate, for all the bad elements, including the music and the children, come together in a fearful collision and leave an ambiguous, awkward mood.

All these quibbles may give the wrong impression. *A Taste of Honey* is a vital, burning film which shouts aloud the anger of youth. The timidities I have mentioned are small

things, and shouldn't make you hesitate about seeing it. Don't miss it—and when you're watching don't concentrate overmuch on looking out for Lassally's unashamed handheld shots (they even open the film). Forget the technicalities for once, and give yourself up to the work of one of the few passionate and alive writers we have.

NEWS FROM THE CLUBS

CHEADLE & GATLEY C.C. are considering a proposal for running a film contest on the lines of the "print battles" beloved of still photographic societies. Idea is to invite a nearby club to take along a couple of films to compete against two by members of the host club, judging to be undertaken by a third club. (T. G. Lewis, 12 High Grove Road, Cheadle, Ches.)

The Viewfinder, FINCHLEY A.C.S.'s magazine now edited by Peter Crawley, continues on its lively way, making a special feature of photographic illustrations. In the current issue members describe the production of their films and comment on cine topics. Briskly written, with a nice mixture of gossip and information, it can well claim a leading place among club journals. (H. J. Hunt, 4 Fursby Avenue, Finchley, N.3.)

THORNIEBANK C.C. Meets on alternate Thursdays at Thorniebank Hall, Thorniebank, Glasgow. Primarily for 8mm. users—work is to begin on an 8mm. film shortly. Details from Miss V. E. Murdoch, 20 Belmont Drive, Giffnock, Glasgow.

Exhibited in local chemists' and photo dealers' windows, stills from the completed films and current productions of HAMPSTEAD FILMMAKERS are being used to increase membership. The group, now some 25 members strong, are at present editing their 8mm. film *Daydream*, the story of a clerk who dreams of winning the football pools—and does. In production is *Hampstead 1961*, the most ambitious project to date in (16mm. colour, sound), to be followed by an 8mm. colour film on candid camera lines—working title *London Reflecting* (Lawrence L. Harris 19 Steeles Rd., London, N.W.3.).

Autumn programme of PONTEFRAC & DISTRICT AMATEUR F.S. includes: *President's Evening* (Oct. 9), Cine Group Lecture at Leeds Art Gallery (Oct. 18), entertaining Mercury Movies (Oct. 23). Their 1960 Ten Best showing takes place at Pontefract Town Hall on Nov. 2.

LONDON SCHOOLS DRAMA ASSOCIATION want to make a documentary on "Drama in Schools". They will be glad to hear from any reader willing and able to assist.

A talk by Dr. Roger Manvell on Oct. 6—subject, "The Experimental Film"—opens the BIRMINGHAM F.S. current

season. On Oct. 20, members will see *Raskolnikov*, Robert Weine's film based on Dostoevsky's "Crime and Punishment." (Dr. G. B. Ansell, 9 Scribners Lane, Birmingham 28.)

WARTH-ON-DEARNE C.C. recently opened their autumn season with a showing of the 1960 Ten Best. Though they expressed great enjoyment of all the films shown, the programme was preceded by a short trailer made by the club. "This was in lip sync," says secretary T. Shaw—"something we didn't see again all evening!"

Claiming that they have adopted 9.5mm. after exhaustive tests on all three narrow gauges, the committee of HALLMEAD THEATRE GROUP (Essex) say it is their choice for colour, b. & w., size—and economy. Spokesman for this new club, Don Snowsell, proudly boasts that their first film, *Magic Ring*, was shot almost completely hand-held. "We feel that tripods have been overplayed" he says.

In addition to their usual filming activities, members of the INTERNATIONAL CINE AND TAPE CIRCLE in the Isle of Wight have been active shooting local catastrophes. Examples are subsidences at Ventnor, a fire at the Theatre Royal, Ryde, and the Lewes floods.

Organised by the CORK CINE CLUB is an 8mm. film competition open to all amateurs residing in the 32 counties of Ireland. The competition closes on Feb. 28 and entries may be in black and white or colour, with a maximum length of 20 minutes. Flora Kerrigan, 50 Grand Parade, Cork, has further details.

Organising a Best Script competition for a 4 to 6 minute film, THE GRASSHOPPER GROUP make the following stipulation: "No grandiose sets, please, no elephants, camels or polar bears unless you happen to work at the zoo..." Among current group productions is an abstract film made by animating coloured scarves to a music sound track. Under Peter Shinkfield, the Grasshopper film library made an £83 profit for the year.

Holiday in London, made by Janet Cook of Worcester, England, was recently shown by SPOKANE CINEMAFACTORS, of Spokane, U.S.A. Club member Kenneth Maddock is an enthusiast for exchanging British/American amateur films.

The 9.5mm Reel

BY CENTRE SPROCKET

What the Eye Sees

A RECENT CONVERSATION got round to the current topic of TV definition: should we switch to 625 lines in this country or stick to 405? A change to the greater number of lines should bring an increase in definition (although not necessarily in picture quality, for 405 lines has other, less obvious, advantages). However, one 8mm. user remarked that the change should help to bring TV definition nearer to that of his films! Now his frame height is only 3.28mm, so, assuming he gets a resolution of 50 lines per mm., he views a picture containing only 165 lines, and even 9.5 and 16mm. men can expect only 300 and 370 lines respectively on the same kind of stock. Obviously, those who look forward to the day when their home movies will achieve definition as good as on their television sets are nearer the mark.

Why was our 8mm. friend persuaded to believe that TV definition is so bad? The answer, I suspect, is that in TV the lines really are lines. When we talk

and how this affects definition and the brightness of the screen.

about resolving power in photography we measure the number of lines per mm. that the system can record; any failure in resolving power does not

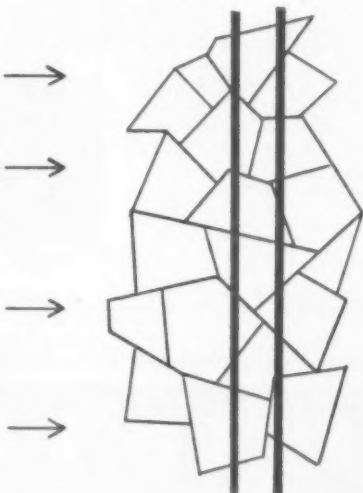


Fig. 1 (C). Two lines very close together can still be seen as lines because at intervals (shown by the arrows) opposite pairs of points will fall on different cells.

leave gaps in the image, as on the TV screen, but spreads the image to merge with its surrounds.

The resolving power of the eye has a certain value for points, and it is this value which was used in setting standards of sharpness for depth of field tables. However, when one considers lines rather than points, the eye has a very much greater power of discrimination. (When dealing with a single broken line, its resolving power is even greater, and wide use of this "vernier acuity" is made in range-finders and similar instruments.) The explanation is quite simple. If the images of two points lie within one cell of the fovea of the eye, they will be seen as a single point, for only the

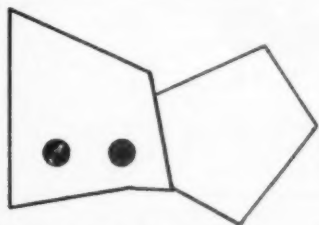


Fig. 1 (A). When the images of two points fall on the same cell in the eye they cannot be separately resolved.

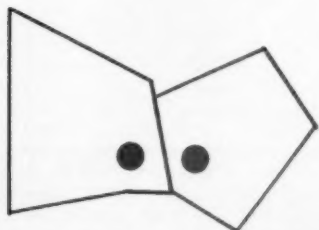


Fig. 1 (B). These points are no farther apart than those in (A). But, because each falls on a separate cell, two images are seen.

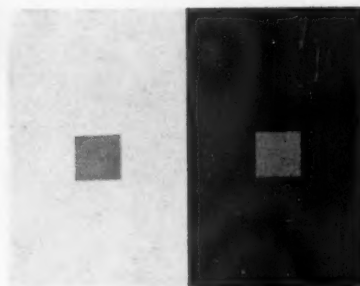


Fig. 2. Which square is darker? Both, in fact, are the same, but the respective backgrounds give the square on the left a greater apparent density than that on the right.

single cell is affected. However, the images of two lines, even if they are closer together than the average width of a cell, will at intervals fall on separate cells and so remain distinct (Fig. 1).

Darker Towards Edges

WHILE ON the subject of optical illusions, I would like to return to the question of screen illumination raised by my recent review of the Europ projector. You may recall that although it gave a fantastic light output for a 50W. lamp, the even-ness of illumination was not perhaps as good as nine-fivers had been led to expect. Indeed, in this respect we have probably been spoiled; the Gem, for instance, shows hardly any fall-off towards the edges of the screen. But the modern trend seems to be in favour of some fall-off towards the edges, and I understand

Continued on page 556

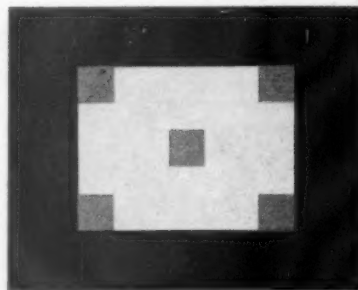
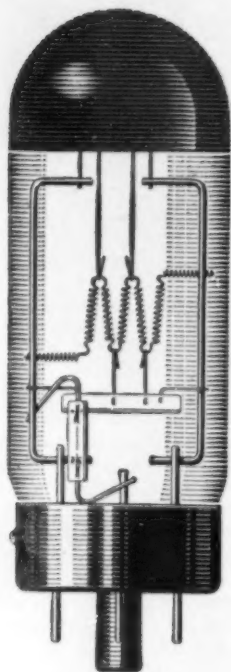


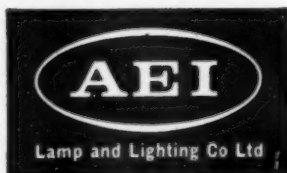
Fig. 3. The principle of Fig. 2 applied to a cine screen. Surrounded by white, the central square looks darker than those, adjacent to the black masking, at the corners. To get the appearance of even illumination over the whole screen, therefore, calls for some fall-off in illumination towards the edges. (Readers unable to see the effect in this necessarily small figure may like to scale it up three or four times. Try white paper on black and some patches of an in-between shade laid on top.)



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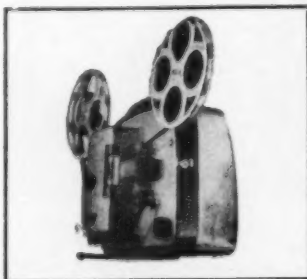
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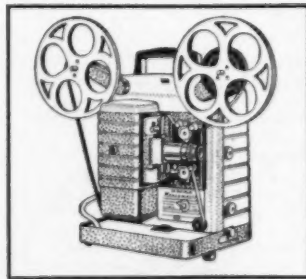
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AN INEXPENSIVE new photo-electric exposure meter from Western Germany is the Perfect, manufactured by Ing. Josef Dorn of Neustadt. It comprises a neat and easily held plastic case with a lenticular window in front and two concentric calculator dials on top. The galvanometer needle sweeps across a crescent-shaped slot adjacent to the dials. For safety, a black silk neck cord is attached.

Before a reading is taken, the outer calculator dial is pre-set according to the sensitivity of the film in use, to a scale calibrated from 12 to 1,600 ASA and 9 to 33 DIN. The 10 ASA setting needed for regular Kodachrome has to be estimated, but this is not difficult to do.

With the outer dial set to the correct speed rating, the meter is aimed at the subject and the inner dial then rotated until its f/8 calibration—marked with a clear symbol—is aligned with the galvanometer needle. Movie exposures can now be read off directly, for taking speeds of 8, 16, 24, 32 and 64 f.p.s., from a slot marked CINE.

In another slot, marked LW, Light Values appear. Exposures for stills are given by opposite pairs of figures on the inner and outer dials (e.g., inner dial f/5.6, outer dial 1/60 sec.; inner f/4, outer 1/120 sec.). The exposure scale extends from 15 secs. to 1/1000 sec. and the aperture scale from f/1.4 to f/45.

PERFORMANCE.—First impressions of this meter were a little unfavourable. It seemed likely to be difficult, when bringing the f/8 symbol into alignment with the needle, for the eye to leap accurately over the gap caused by the intervening outer dial. However, experience proved that the matching of symbol to needle can be done to within a quarter of a stop over the central two-thirds of the scale (where, in daylight, the needle will normally be) and to within half a stop at the sides. For ordinary filming purposes, this is close enough.

The vertical and horizontal acceptance angles of the meter are almost identical

and not excessively wide, the light falling to a half (one stop) at 38° and 36° respectively from the line.

Readings at various points of the scale were compared with those given by meters known to be reliable and were found to be in reasonable agreement. This was borne out by filming tests. Twenty assorted scenes shot on regular Kodachrome were all satisfactorily exposed, as were a few made by the incident-light method, following the manufacturer's instruction to open the

indicated aperture by two stops for light subjects and three stops for dark.

At its modest price of £3 9s. 2d., this meter is good value. It gives trustworthy direct readings on the majority of scenes and, if the usual allowances are made, will show how to shoot scenes containing abnormal proportions of light and shade. An additional recommendation is the maker's guarantee that any fault developing within two years of purchase will be remedied free of charge.

Submitted by Pullin Optical Co. Ltd.



Spool Box — from page 545

flock-covered interior of the box; the three edges of each division are given a coating of glue, left for about 15 minutes to go tacky, and finally fitted in position—this must be done carefully, without smearing the glue all over the flock paper. Two panel pins back and front will hold each division while the glue sets.

The handle for the box can be bought ready made, but that shown in the illustration was cut and shaped from a $4\frac{1}{2} \times 1\frac{1}{2} \times \frac{1}{2}$ in. piece of softwood. It is attached to the lid with glue and a couple of countersunk screws from below. When this has been done the inside of the lid is lined with flock paper and the edges trimmed flush.

All panel pins are punched below the surface and the holes filled with Plastic Wood. Very little sandpapering is required to get a good finish, since the hardwood strip as bought already has a very good surface. The box can be polished with a good proprietary "natural"-finish furniture polish.

Two small hinges and the spring-catch fastener are fitted. Lastly, self-adhesive labels (*Arrowtabs*) are stuck inside the lid, opposite the compartments, for indexing the contents.

These labels, incidentally, can easily be peeled off and replaced with new ones, without damage to the flock paper lining.

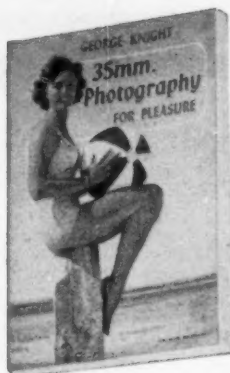
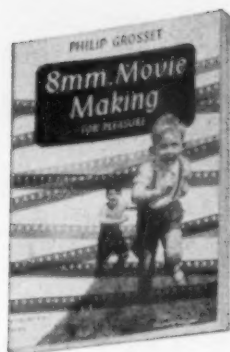
Making a Start — from page 544

engaging with the perforations, achieve this.

The choice of splicer may well depend upon the amount of editing you expect to do. If all you need is some means of stringing together 50ft. lengths after cutting out waste, tape splicing will probably suit you best. If, on the other hand, you expect to make some hundreds of splices in the course of a year, you will probably prefer to follow the professionals and splice with cement, with the certainty that your joins, if properly made in the first place, will hold.

Rewind arms are useful not only to hold reels when editing but also for rewinding after projection. This can be done on the projector, but films are less liable to suffer damage if they are wound back slowly by hand, tension being controlled by a finger pressing on the supply reel. One or both of the rewind arms should be geared, and they should be high enough from the baseboard to take the biggest size of reel your projector will carry.

(Next week: MORE ABOUT SPLICING)



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Well experienced in the use of the miniature camera, the author describes in an easy interesting style the way to take successful black-and-white or colour pictures. Subjects covered include Types of Film; Exposure; Filters; Arrangement; Flash and many other useful hints. Half-tones and line illustrations. 128 pp.

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Written for the many new amateur enthusiasts, this is a non-technical guide to professional methods of tape recording. Hints on sound effects, mixing and editing tape as well as placing microphones, stereo, and explanations or technical terms. Line illustrations. 128 pp.



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A useful dolly for tracking shots—at least when the boot lid is one that stays where it's put. Cameraman is a member of Muswell Hill Photographic Society's Cine Group, which has been humming with well-directed activity since its formation earlier in the year. Next month it starts on a full club production—work so far has been mainly in small sub-groups—and will welcome new members. Details from E. C. Stewart, 128 Dukes Avenue, London, N.10.

O-D-D- S-H-O-T-S

BY GEORGE H. SEWELL, F.R.P.S. F.B.K.S.

Animating Maps If you are animating a map to illustrate your holiday journeyings, don't jump a place name on it if it carries a number of them already, for it will probably go unnoticed, as will an arrow tricked into position to point out some feature or other. But if you rapidly *slide in* a name or arrow, no one can fail to be aware of it.

Neither name nor arrow need start at edge of screen; it can be jumped in inside the picture, provided there is ample space for it to travel before halting at the pre-arranged spot. Of course, if the place name is on the route you are illustrating, the line of the route can provide the movement, but the name must be jumped in directly the line reaches the spot, otherwise the effect of movement will be lost.

Animating route lines can be rather tedious, but there are some tricks which help. For example, you can draw the whole of it in grease pencil (or in an ink that can be easily rubbed off) on a cel which you place over the map. Then shoot frame by frame with the camera upside down, and rub out the line bit by bit between exposures. This gives a much more stable line than you can normally get by inking in the route stage by stage, and you don't have to wait for the ink to dry; but, of course, it can't be done on 8mm.

Another way of economising on animation is to let the line get ahead and then chase after it. Suppose, for example, you want to show it running from Calais to Paris. For the first shot have the southernmost part of the map extend to just below Amiens, and then show the line moving swiftly down to Amiens and beyond it and out of frame.

A few seconds later, tilt down rapidly along the road (which you have already inked in) to Paris. The audience will almost be prepared to take bets with you that they saw that line progressing steadily all the way from Calais to Paris. But don't use the trick too many times in one film.

Paper Work The other day I came across copies of film criticisms I had written at the request of a prominent film maker (a winner in a national competition) and of a man who has attended a well-known film school. I spent a couple of hours on the first and rather longer on the second, and in the case of the latter went to some trouble to find his address, which he had forgotten to give.

Both criticisms met with the same fate: a stony silence. It's curious how reluctant amateur film-makers are to put things on paper, from scripts at one end of the scale to the simple acknowledgement one would suppose common courtesy demanded.

Paradoxically Enough ... Have you noticed, now that the flood of holiday photographic reminiscence is coming in, that the still photographers mostly shoot people and the movie-makers buildings and landscapes?

Turning Over Fresh Leaves A friend of mine, hurriedly erecting his 8mm. projector for an impromptu show, quickly arrived at a way of giving it the right tilt. He opened a fairly thick book and obtained almost vernier accuracy by putting the front legs of the projector on it and

turning the pages until he had the height he wanted.

Preserving Putty Most movie-makers are handymen, with putty often forming part of their Do-It-Yourself kit. I never could seem to keep putty for any length of time without its drying out and having to be thrown away or resuscitated at considerable trouble, but now after all these years I have found a complete solution so obvious as to be almost laughable. I just wrap the stuff in a polythene sheet, in which it remains in its pristine state almost indefinitely. No more tiresome excavating from tins!

Musical Bricks Most people who add music to their sound tracks appear to do little more than lift the whole of each piece and run it till the end is reached.

The adroit sound editor, on the other hand, will transfer various passages from the original and will then use these musical bricks to build longer movements. Quite a short original melody or passage can in this way be made to supply a more impressive "work."

Modification of the speed of the tape also has its uses in sound editing. For instance, a march may be almost imperceptibly too fast or too slow to match the screen. Often the tape speed can be altered fractionally without the change of pitch being noticeable.

In another case it may be possible to alter speed with the deliberate intent of modifying pitch, thus avoiding discordant transitions from one piece of music to the next. But in this case slight alteration of the tempo must not matter.

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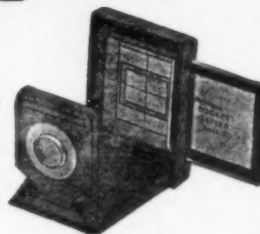
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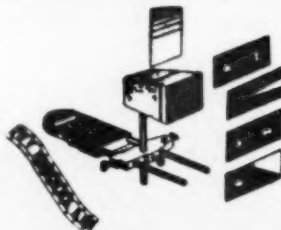
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8mm Viewpoint

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A BOY FLOATS his model boat. Suddenly a gang of boys hurl stones at it. "Sadly daydreaming," explains a subtitle and we dissolve to a ship's captain's bearded face. Somehow he looks very like the boy we have just seen. A combination of tilted camera, shots of models, stills and a few genuine shots of the fleet takes us on to a warship going into action.

We see massive engines turning, radar operators at work, fingers feverishly tapping out Morse, a flickering radar screen, and a message coming across on a teleprinter. The captain orders, "Open fire!" A great flame shoots from a gun and we see a direct hit on the enemy warship.

We dissolve back to the boy by the stream. He wakes from his daydream, but now one of the gang that attacked him is sleeping. The camera pans slowly past some leaves to reveal a crocodile (rather a stuffed one, I admit, but a crocodile). Now we are in deepest Africa. We look out through the leaves to dark figures in a boat. There is a C.U. of a dusky face watching. It is all very dark and mysterious.

Jungle Thrills

Suddenly an arrow is fired. The boat is holed and its occupants jump overboard. There is a crocodile near them. There is some confused thrashing around, but one of the men (actually a boy) reaches shore safely. He explores the dense jungle, coming every now and then on a tortoise or a snake slithering past. A bird (also stuffed, I think) peers down at him. We look through twigs in the foreground to the solitary explorer clambering on.

Then he finds a skull—with an arrow through it. He staggers to a hut with an ornate awning fluttering outside. Inside is a fat, fearsome idol. The boy wakes to find the boy whose boat

was attacked peering over him. They are about to fight but the others run up, and off they go together.

Are you a little confused? If so, I expect it is my fault because it is quite a long time since I saw *Boy's Saga*, the half-hour "Tale of Two Boys and Two Dreams" made by the Dragon School, Oxford, but the remarkable art direction (particularly the model shots in the first dream, and the imaginative photography so evocative of the jungle in the second) made a vivid impression. What other amateurs would even attempt to stage a full-scale battle at sea? Kevin Brownlow, perhaps, but then he would insist on sinking real battleships.

Yet this sort of impressive costume production can come off remarkably well. Do you remember Ace Movies' *Sakura*? Or the Glasgow Boy Scouts' *Indian Gold* (available from the B.F.I.)? Neither film had much plot to speak of, but both had a verve and attack that made an audience sit up and take notice—for a time at least.

So, if you want to have a film in next year's Ten Best, why not produce a Spectacular? Either that, or a very simple family film full of big close-ups. Both would come as novelties to the judges and no-one else is likely to do the same thing better. In fact, no-one else is likely to do the same thing at all.

THINKING ALOUD

ONE ADVANTAGE of belonging to a cine society is that you may have access to a 16mm. sound projector and, through this, to 16mm. free-loan films. If so, don't confine yourself to those "obvious" choices that can be relied on to please everybody. Look around in the catalogues for some of the better semi-specialised films. Often these will appeal strongly to small groups within the society and often, too, their hand-

ling of a subject will suggest techniques that will be useful in your own work with 8mm.

Take *C/o St. Christopher's*, for example. This is a 13-minute b. & w. sound film available free on 16mm. from British Transport. I am not often an admirer of this unit's films: they are too often a combination of dull visuals and pretentious "poetic" commentaries, but *C/o St. Christopher's* is quite pleasing in an innocuous sort of way. Directed by James Ritchie, it shows a residential school for the children of railwaymen. It begins happily with a shot of a little boy waking up and staring off-screen. The editor shows what he sees: cuddly toys on the mantelpiece. Somehow it is all very homely and reassuring.

A woman's voice speaks the commentary to a twanging musical background. What an immense advantage the professionals have in not having to fall back on stereotyped mood music records! However, the use of sound effects is not very consistent: we hear the bell being rung for grace before breakfast, but do not hear the children saying grace. I found this a little disconcerting. If you go in for sound effects, you should surely include all the sounds within a particular sequence.

Spontaneity Lost

We are shown the children reading letters from home. This fascinated me because I recently made a film at a residential school and also included a sequence about this. In mine, however, although we heard the words of one of the letters on the sound track, I did not try to suggest what the readers were thinking. Ritchie does and we hear a girl whose father is leaving the district thinking: "Perhaps I'll have to leave here." Now this incident (like the one before it in which a boy is shown grabbing another's letter) was obviously staged. The audience may not consciously stop to work out that she must have been given the words to say, but, somehow, the overall impression of spontaneity is lost.

Then—a little belatedly, I think—we are shown the woman whose voice we heard earlier: "I'm Miss . . . I'm the Lady Superintendent". On me, this also jarred: I'd have been much happier if she had introduced herself by her Christian name and surname (if we had to be told her name at all).

Continued on next page

8mm. Viewpoint—

continued from page 553

She sounds equally stilted a little later when, after noticing the girl almost in tears (quite well acted, but surely any sort of artificiality would have been better avoided), she thinks aloud: "I must have a word with her. We don't want her being worried about it." This is all very well-meaning, but, once again, it just does not convince. It is probably a good idea to have people intimately concerned with the work discussing it, but the words should be theirs — and not the script-writer's.

When the other children go off to local schools, one boy, soon to leave, waits to see the Youth Employment Officer and wonders what job to take up. He wanders to the gym, where he thinks he might be a gym instructor; he picks up a model and imagines himself an engineer; then, as he looks round the dining room, he wonders if he would make a good waiter but, remembering how he spilt the food last time he tried to serve, decides not. All this is evidence of a filmic imagination — but I wonder if a boy's mind would really work like this. Once again, it seemed a little artificial.

Mock-Casual Approach

Parents are always welcome at the school and we see a father visiting his three children. He comes "from Glasgow, if I remember rightly," says the commentator. Once again, this mock-casual approach is jarring and makes you question the honesty of the speaker — it's like those TV programmes in which people rehearse all afternoon, then solemnly meet each other for, apparently, the first time in the evening.

"Yes, we're a large family at St. Christopher's," we are told as the day comes to an end, "but we're a happy one." That is very much the impression that the visuals give. Altogether, it is a film that will interest anyone who is thinking of allowing the different members of the family to record their own parts of the commentary. The system can work, but you do need to be aware of the dangers revealed in this film. Perhaps a solution would be to record the family's comments first, edit them down, then film the visuals to match. Certainly, it is easier to act the visuals than read a carefully prepared commentary and make it sound as though it is absolutely impromptu.

The advice of the ACW Enquiry Bureau is available free to every reader with a technical problem. Queries are answered by post (we regret we cannot undertake to answer them by telephone) and a small but representative selection is reprinted weekly on this page. It will help the Bureau to give a speedy service if querists confine any one letter, whenever possible, to a single problem (or related parts of the same problem) and write on one side of the paper only. Letters should be accompanied by a stamped addressed envelope and the Query Coupon from the foot of this page. Address: ACW, 46 Chancery Lane, London, W.C.2.

Your Problems Solved

Sound Output

The sound output of my 16mm. projector is adequate for home use, but is insufficient for use in the moderate-size hall of our youth club. Clarity of speech is poor in the hall, too. Could I fit a larger speaker or make some small modification to the amplifier to give more output?—A.H.W., Woking.

First, try a new exciter lamp; the present one may be blackened or have a distorted filament. Second, have all the valves tested, including the rectifier.

We do not recommend modifying the existing amplifier unless you are experienced in this type of work. Fitting a larger speaker would not itself increase the sound output. Strictly speaking, a very expensive speaker with a bigger magnet would be more sensitive, but you are looking for a greater increase than this.

We can only suggest that if you have a larger amplifier available, you consider coupling it with the projector amplifier. A competent radio serviceman would be able to fit a socket on your projector to tap off the sound half-way through the amplifier, so that this could be coupled into the input of the second amplifier which, in turn, feeds the loud-speaker.

Lack of clarity in the hall could be due to poor acoustics of the hall (more absorption needed), or to a setting of the tone control(s) giving too little top. The sound optic may be responsible. Dirt on its lens and/or defocusing affect high-frequency response.

Daylight Film Indoors

Can I use Daylight Kodachrome indoors for titles in artificial light if I put a D to A filter over the lens? The lighting would be from two 100W. lamps 12in. away at 45° to the centre of the title. Also after exposing colour film on scenes outdoors, can I superimpose titles shot indoors?—D.J.F., Guildford.

You can certainly use Daylight Kodachrome with the D to A conversion filter (e.g., Wratten No. 80B) for titling in artificial light. But we suggest you do it with two No. 1 photofloods — firstly, because you will need more light than 100W. lamps will give you, and secondly because household lamps give too yellow a light (though this may not be too important for titling). The f-number

needed varies somewhat according to the reflectors you use with the lamps and with the titles, but on Kodachrome Daylight with a D to A filter you will need an aperture of approximately f/3.5 at 16 f.p.s. On Kodachrome II it would need approximately f/5.6.

You can superimpose white lettering on dark subjects by double exposure. Shoot the background scene, wind back the film (in the dark if your camera doesn't have a backwind) and rethread, then expose the title using white letters on a dead black (e.g., velvet) background. It is also possible to superimpose bright-coloured lettering on suitable backgrounds, but the letters must always be filmed against black velvet so as not to affect the previously exposed scene.

8mm. Gate Aperture

Could you please tell me the 8mm. gate aperture size?—J.H.B., London, N.W.8.

The camera gate aperture should be 0.188 × 0.138in. (4.78 × 3.51mm.), and the projector gate 0.172 × 0.129in. (4.37 × 3.28mm.). The projector gate aperture is slightly smaller than the camera gate aperture, to ensure that one does not project the edges of the frame on to the screen.

Viewfinders

What is meant by a "same size viewfinder"?—A.J.P., Bristol, 1.

The simplest sort of same-size viewfinder is a wire frame, with no lenses at all. The eye sees the subject through the frame, obviously with neither enlargement nor reduction. For cine use, such a simple device would have the disadvantage that as the finder is compact, the frame is close to the eye and the edges appear unsharp. By using one or the other of the principles of the telescope, however, a viewfinder can be made sufficiently compact to be incorporated in a cine camera, and still give a reasonably or even quite sharp frame. By changing the strengths and separations of the lenses in the viewfinder it is possible to change the degree of magnification or reduction to suit the design, and match the field of view to camera lenses of different focal lengths.

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Inside Your Projector—

continued from page 335

tion of any kind where the air goes in and at the top of the lamp house where it comes out. Dust-clogged grilles will need cleaning with a brush, and all the air ducting must be kept clean. If the air goes in underneath the base, never stand the projector on a cloth, but on a hard smooth surface. The feet of the projector will sink into a cloth, reducing the air space and if the cloth has a rough hairy surface, it will restrict the air flow still further. The cooling of many projectors is barely adequate under the best conditions, so it is vital that such conditions be maintained.

Mirror Adjustments

THE LIGHT from the lamp has to be directed through the film and projection lens to the screen. The rays of light leave the lamp in all directions and, obviously, very little will shine in the direction of the gate, probably less than 1 per cent! Disregarding for the moment the internal reflector lamps, this state of affairs can be improved by using a condenser.

The condenser is just a simple uncorrected lens which collects as much light as possible from the filament and focuses it into a cone which will form an image of the filament at the centre, approx., of the projection lens. The bigger the condenser (within reason, of course) and the closer it is to the filament, the more light it will collect. Even so, most of the light is still wasted, and we can use a bit more of it by putting a focusing mirror behind the lamp which will catch the rays and direct them back through and between the filament's themselves. The condenser will then collect both the original and the reflected rays and project them all at the gate. In this way we may be able to put as much as 10 to 15 per cent. of the light to work, but rarely if ever, are we able to use any more.

If the filament has a large area, the condenser cannot properly collect light from all of it, and may be unable to produce an image of it small enough to go through the gate and further light is wasted. This almost always happens with high voltage lamps on substandard projectors and is the reason why lower voltage lamps are more efficient. There is another reason, also. Lamps having a large number of filaments in two planes (biplane filaments) usually present an almost unbroken area or wire to the gate, the rear filaments filling the gap between the front ones. This means that, no matter how carefully the mirror is set, the reflected images cannot be interlaced with the originals—cannot get through between them, and are therefore largely cut off.

A home-built projector we know of is made to take either a 500 watt 240 volt lamp or a 300 watt 100 volt lamp. The

former has 11 filaments in biplane form and the latter has two with a space between them. Interlaced reflection is impossible in the one case and perfect in the other. On the screen there is very little difference between them, the 500 watt lamp giving only slightly more light than the 300 watt. The 500 watt lamp consumes 500 watts and the 300 watt lamp, needing a series resistance, consumes in all something over 600 watts; but the 300 watt lamp is cheaper and lasts longer, so there is little in it either way, but the 300 watt set-up is obviously more efficient as regards the actual light available on the screen, compared with the power that goes into the lamp.

The cheapest condenser is a plain double convex lens, but since it must be of very short focus, the faces are deeply curved. This is a disadvantage as light impinging on the surface at the resulting angles is reflected away to a considerable degree instead of penetrating the glass. In order to reduce such losses, the lens can be divided up into two plano convex lenses and assembled with the plano (flat) surfaces outside and the curves inside. This is the usual form, although there are others and some of them are made up of more than two glasses.

Condensers do not usually give any trouble, and even if one of the elements cracks as a result of overheating, there is usually no visible change in the light on the screen. But they must be kept clean and free from dust if they are to transmit

the maximum available light. Mirrors, too, give little cause for complaint but must also be kept clean if they are to reflect the light at maximum efficiency. Usually silvered glass reflectors are rather more efficient than plated metal ones.

Modern lamp houses and cooling arrangements are sometimes barely adequate, as has already been said, and if your projector is a second-hand one and overheats, blisters lamp bulbs, cracks condensers and mirrors and generally plays up along these lines, make sure that someone has not put in a more powerful lamp than the machine was designed for.

Lamps are not very efficient things and they produce a lot of heat as well as light and this heat must be got rid of somehow. It comes as a shock when one realises that a 500 watt 240 volt lamp consumes about two-thirds of a horse power (1 h.p. = 746 watts). Judging by the puny little fans fitted to some projectors there are a number of designers who have not realised it and would do well to consider that a large proportion of this power comes from the lamp in the form of heat.

To be continued

1961 TEN BEST

Overseas readers intending to compete can now obtain entry forms on application to *Amateur Cine World* (Ten Best), 46 Chancery Lane, London, W.C2, England. This year's contest closes on December 30, by which date all entries should be in our hands.

Entry forms for U.K. readers will be published in *ACW* nearer to the closing date.

The 9.5mm. Reel—continued from page 547

this has long been accepted practice in 35mm.

In the days when we carefully sealed every chink that would let light into the room, put screens in front of the fire and shut the door when our audience was seated, our 10w. lamps in the Home Movie seemed quite adequate, and were even thought sufficient for a 4ft. screen. The prints favoured then were somewhat thinner than those required for modern projectors, but quality was remarkably high and few complained. Colour altered all this: to get the best from Kodachrome or PCF, you need very much more light.

The brightness range that the eye can view comfortably is limited. Having boosted our projector lighting to give good results on colour, we now find that the contrast between the high-lights and the black screen surround is too great. A slight vignetting of the light towards the surround is therefore desirable and gives a picture that is much more restful to watch (Figs. 2 and 3). This fact, of course, was in the mind of the British Standards Institu-

tion when it drew up its "Recommendations for Screen Luminance for the Projection of 16mm. Film" and included the following:—

"Experiment has shown that the most artistic presentation of the picture results not when the screen is illuminated evenly over its whole area, but when the luminance diminishes towards the sides and the corners. It is for this reason that . . . the luminance of each side measured on the horizontal axis should not be less than 0.6 times the measured luminance at the centre, and should preferably be as near as practicable to 0.7". (BS.2954:1958.)

Projector designers have to choose between maximum illumination and maximum evenness. A light focused on the gate gives the first and a light focused on the optical centre of the projection lens gives the second. Modern integral-mirror lamps—such as the 8v., 50w. and the Tru-Flector focus light on the gate when mounted according to the maker's instructions. So maximum illumination seems to have replaced evenness of illumination as the most desirable characteristic—apparently not such a bad procedure after all.

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